Profile of the successful recruiter.

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PROFILE OF THE SUCCESSFUL RECRUITER

by

Joyce E. Zellweger

December 1986

Thesis Advisor: George W. Thomas

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Profile of the Successful Recruiter

by

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

This thesis develops and analyzes a model to identify personal attributes of a successful recruiter. Expert Systems software is used to elicit from five U. S. Army recruiting experts characteristics associated with recruiter success. Experts included current and former Active Guard and Reserve (AGR) recruiters from various levels of the U. S. Army Recruiting Command. An interactive computer program based on Quasi-Artificial Intelligence (QAI) captured the experts' knowledge, experience, judgments, and intuition to create expert systems that can be used to make recruiter selection decisions. The study finds that personal characteristics such as Integrity and Motivation, and skills such as Listening and Informing are substantially more important than the types of attributes generally used to predict recruiter success.

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I. INTRODUCTION

A. THE PROBLEM

One of the most challenging tasks confronting the military services in the All Volunteer Force era is field recruiter selection. Effective selection procedures increase the likelihood that the services will recruit enough people to meet their authorized strength levels, their recruiting goals, and their assigned missions.

Although recruiter selection processes vary by branch of service, they share a major flaw: the processes used do not provide enough information about whether these people will be successful recruiters. Military assignment practices do not incorporate sales aptitude testing or profiling of those characteristics found in successful recruiters. In some cases, personnel have been assigned to recruiting duty simply because they were available for transfer at the same time that a recruiting job became vacant.

The purpose of this thesis is to identify attributes associated with successful recruiters. This is a useful area of research that could improve the services' recruiter selection procedures and assignment practices. Better recruiter/job matches could increase productivity and morale, and reduce turnover and related costs resulting from moving, training, and replacing recruiters who are not right for the job.

The services can benefit from a model developed to identify personal characteristics that can be used to help select, assign and train personnel who are most likely to become successful recruiters. As resources continue to grow scarce and competition increases for a shrinking supply of age-eligible male youth, the military services will need recruiters who can work effectively and efficiently if the All Volunteer Force is expected to survive.

B. PURPOSE

A model will be developed and analyzed to identify which attributes make the most valuable contributions to successful performance as a recruiter. All services will be considered, but the emphasis of the study will be on the U. S. Army because data are readily available for its recruiting personnel. This thesis will concentrate specifically on the personal attributes associated with recruiting success of the U. S. Army's Active Guard and Reserve (AGR) recruiters.

At the U. S. Army Recruiting Command (USAREC), success of an AGR recruiter is based primarily on achieving the assigned recruiter mission, or goal. One objective of this thesis is to critique the applicability of existing USAREC data for this type of analysis. For example, production data may be unsatisfactory because production reflects several factors other than a recruiter's individual

productivity, such as the potential of the market area, management policies, etc. A second objective of this thesis is to develop a profile of a successful recruiter.

C. BACKGROUND

In 1979 USAREC became responsible to recruit people for the U. S. Army Reserve (USAR) in addition to its Active Army recruiting mission. This additional mission posed a multitude of problems for USAREC in light of the fact that the USAR is a geographically limited entity, unlike its Active Army counterpart.

In support of this task, USAREC now has approximately 1780 field Active Guard and Reserve (AGR) recruiters. This is a volunteer force chosen by USAREC from a field of solicited, qualified USAR applicants. Carefully selected recruiters are needed to ensure that the Army's reserve units are filled to authorized strength levels.

Currently, the selection criteria for AGR recruiters are based upon administrative regulations and personal interviews or references at the Recruiting Battalion level. Some of the criteria contained in administrative regulations are described in general below. An AGR recruiter applicant must:

1. Be in paygrade E6 or E7 (waiverable for E5 members if insufficient numbers of E6's and E7's apply).
2. Have a GT score of 110 or higher or ST score of at least 100 (no waiver). GT, general technical aptitude, is a composite test score formed by combining the Verbal Comprehension and Arithmetic Reasoning subtests of the

Armed Services Vocational Aptitude Battery (ASVAB). ST, skilled technical aptitude, is a composite that measures ability to read technical manuals, etc.

3. Be a high school diploma graduate or have one year of college and a GED (no waiver).

4. Have less than 15 years Active Federal Service. (Member must be able to serve at least five years on active duty before becoming eligible to receive military retired pay.)

5. Be at least 21 and not older than 35.

6. Have no marital, emotional, financial, or major medical problems that would hamper performance on recruiting duty.

7. Be interviewed and recommended by recruiting battalion personnel (no waiver), and

8. Meet requirements concerning number of dependents, physical standards, past performance, military appearance, and others. [Ref. 1:p. 15]

USAREC has 56 recruiting battalions and other commands within its organization as depicted by Figure 1.1. Each Battalion Commander is responsible for soliciting applications and conducting interviews to fill AGR vacancies within that battalion. (Most AGR positions within a recruiting battalion are recruiter positions, so AGR recruiters essentially recruit their own replacements [Ref. 2]). Even when no vacancies exist within a particular battalion, production continues, and the battalion continues to select AGR recruiters who will fill other AGR recruiter vacancies within USAREC. Figure 1.2 outlines the procedures for selection and training of AGR recruiters [Ref 1:p. 25].

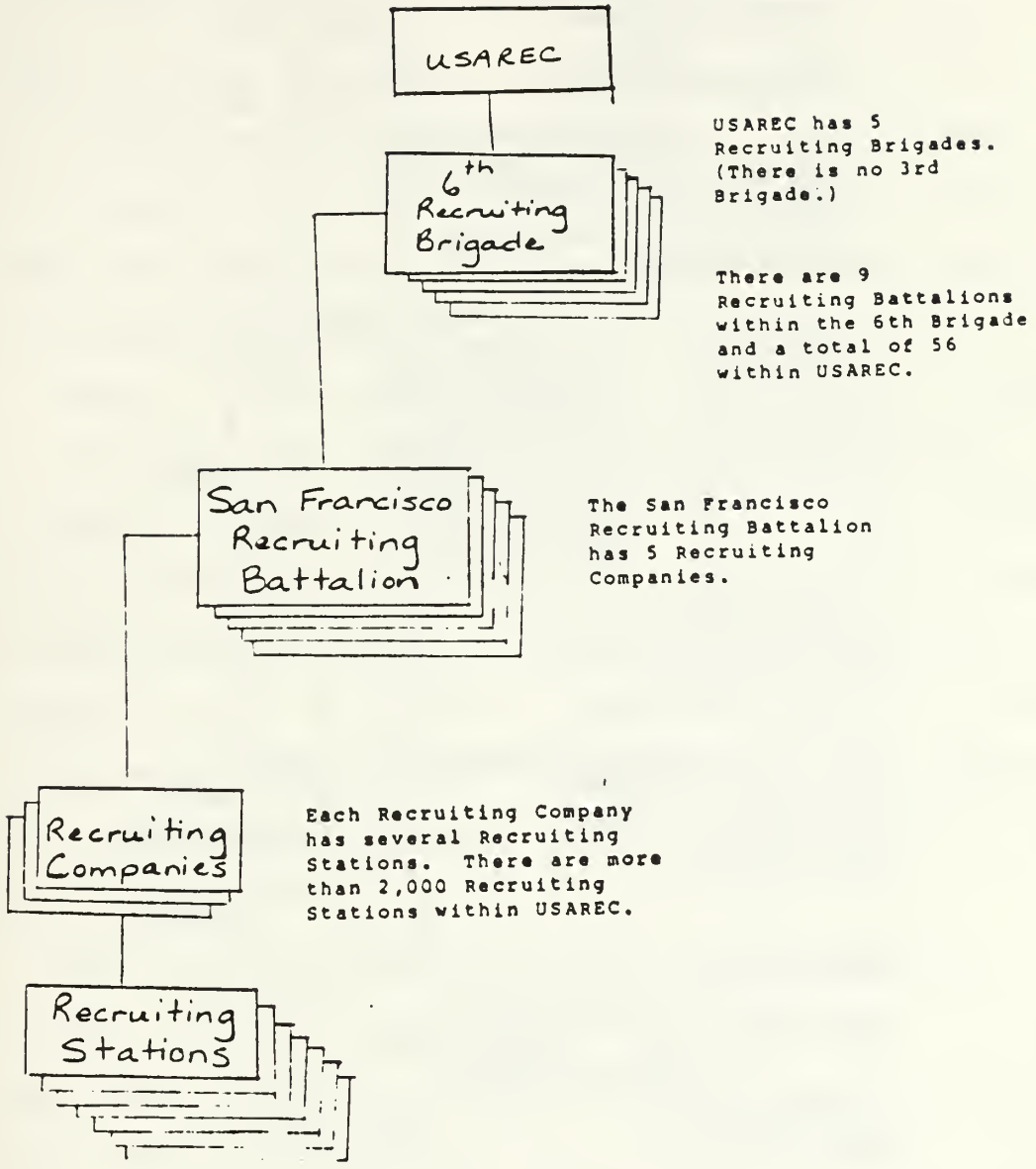

Figure 1.1 The U. S. Army Recruiting Command Organizational Chart.

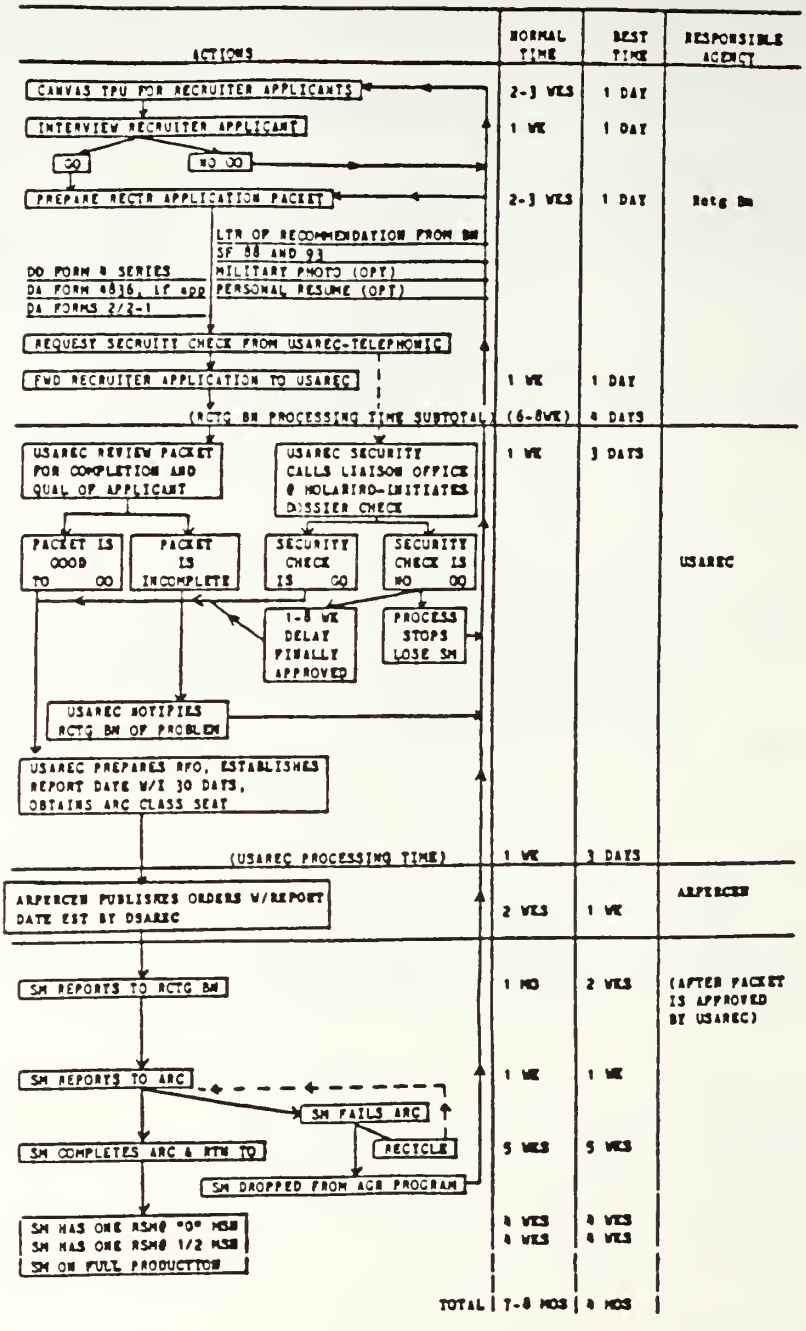

Figure 1.2 Procedures for Selecting and Training AGR Recruiters (Ref. 1)

After the interview is completed, the Battalion Commander selects or rejects the applicant and forwards the application to USAREC for administrative review. If USAREC's review is favorable, the application is sent to the Army Reserve Personnel Center (ARPERCEN). This is where the final decision is made. If ARPERCEN's review is favorable, orders are issued, and the new recruiter receives a specific recruiting assignment.

Before starting work, the new recruiter must complete the Army Recruiter Course at Fort Benjamin Harrison. The recruiter remains in an Active Duty for Training (ACDUTRA) status until completing the training course. This policy provides USAREC and ARPERCEN some flexibility should the new recruiter fail the course. Instead of keeping a failed recruiter on active duty for three years in a non-recruiting job, ACDUTRA can be terminated, and the person can be sent home.

The interview phase is probably the most important part of the recruiter selection process, yet this is where regulations and guidance appear to allow the most variation. Each recruiting battalion has the authority to conduct interviews based on its own rules and needs. Thus, it is conceivable (and highly likely) that procedures vary among battalions. Interview policy and decisions such as number of board members (is a one-member board allowed?), officer/enlisted mix, experience of board members (are

members required to have recruiting experience?), length of boards, and questions asked vary not only from one battalion to another, but also from one board to another within the same battalion. A possible result is that different boards might make different decisions about the same applicant based on the particular experience, judgments, biases, and intuition of any one board's members. The subjective nature of the interview process could well result in a wide variety of decisions, some of which may be more likely to yield placement of successful recruiters.

II. LITERATURE REVIEW

All of the military services have studied ways to select the best recruiters. This task grows more critical in the All Volunteer Force era as competition grows among the services for a shrinking pool of age-eligible males.

This literature review will provide an overview of research on the selection of successful recruiters. The review will include discussions of methodologies for determining factors associated with successful recruiting, commonality of resultant factors, problems encountered, and will conclude with an assessment of future research needs in this area.

This literature review will address the following questions:

a. What profile of successful recruiters has been identified by previous research efforts?

b. What methods were used to identify these characteristics?

c. Are the results consistent and valid?

d. What limitations and problems exist in previous work?

e. What are the implications for future research?

While all military services are represented in the literature, Air Force studies are outnumbered by a wide margin. There appear to be at least two logical reasons. For the first few years after the inception of the All Volunteer

Force, the services fielded volunteer recruiter forces. That situation has changed. Today, all services except the Air Force rely on recruiting forces comprising mainly non-volunteers. Another explanation for the Air Force's comparatively small body of research on recruiter selection is that service's historic recruiting success. The Air Force has been the number one service choice among potential enlistees for decades, and the service has met its recruiting goals with no apparent difficulty. Thus, the Air Force has not had as much of a need to examine the recruiter selection issue.

Although various methods have been used to conduct research in recruiter selection, most researchers used paper-and-pencil test batteries in their attempts to identify characteristics of successful recruiters and predict recruiter performance. Other researchers used biographical information, structured and unstructured interviews, job analysis, assessment centers, and other methods.

Although most older studies reviewed presented reasonable hypotheses, sound analysis, and interesting conclusions, results in many cases were disappointing. In several studies, few findings were statistically significant. In others, findings that were significant had dubious meaning because they were not cross-validated. In still others, when cross-validation was attempted, original results could not be duplicated.

Some researchers shared common problems in their work that may help to explain their disappointing results. The most common was dubbed the "criterion problem": measuring recruiter performance in a reliable and valid manner [Ref. 3:p. 16]. Researchers have used supervisory ratings, school performance, percent of quota achieved, and total number of recruits enlisted as performance measures, among others. Yet, supervisory ratings are often unreliable and of questionable validity [Ref. 4:p. 1]. Even with the best of intentions, supervisors can be influenced by characteristics unrelated to job effectiveness. This can lead to evaluations based on reputation rather than performance.

For example, as one study explained, a recruiter might be rated high because he is likable and has good military bearing and a good production record. Yet, the recruiter's successful production might be the result of having been assigned to a fertile recruiting territory. [Ref. 5:p. 14] Graduates of recruiting school may perform differently in the field than they do in training. Finally, using recruiter production figures that do not account for "opportunity bias," the relative ease or difficulty in obtaining enlistments in a particular area, fails to examine variations in productivity due simply to differences in individual recruiters [Ref. 5:p. 16].

Another problem that plagued some research was a lack of information about the recruiter's job. Several studies attempted to correct this by identifying tasks recruiters perform, and later research benefitted from information collected through job analysis.

The selection environment, while not exactly a "problem," has become a necessary consideration in recruiter selection. Since most active duty recruiters are now selected involuntarily, recent research attempted to identify reliable recruiter selection methods that would not be vulnerable to compromise or "faking," as test batteries are. (The number of recruiters selected involuntarily varies by branch of service. The Air Force is currently the only service whose active duty recruiters are all volunteers. Selection procedures also vary within a service. For example, nearly all of the Army's Active Guard and Reserve (AGR) recruiters are volunteers, yet most recruiters who enlist people into the Regular Army are non-volunteers.) Researchers in favor of more passive methods advocate the use of demographic, biographical data the services maintain routinely in various data banks.

The next section discusses relevant studies organized by research method. Unless particularly relevant, older studies are discussed fairly briefly. More recent work is discussed in greater detail.

A. INTERVIEWS

1. Borman, Hough, and Dunnette

A 1976 report published by NPRDC describes the efforts of Borman, Hough, and Dunnette to develop behaviorally-based rating scales to evaluate the performance of Navy recruiters. During two days of workshops, more than 800 critical incidents (examples of recruiter performance) describing effective and ineffective recruiting performance were obtained from field recruiters from all Navy Recruiting Areas. Another 135 performance examples were solicited from Navy recruits during interviews at boot camp. Researchers believed that an extensive analysis of the recruiter job would be required before any further research on recruiter selection could be accomplished. To become familiar with the recruiter job, the researchers went to those who knew the job: recruiters, supervisors, and recruits. NPRDC's 1976 study was the springboard for three additional studies conducted over the past ten years. These studies are discussed in the next section. [Ref. 6]

2. Borman, Toquam, and Rosse

A 1977 Army Research Institute study [Ref. 7] hypothesized that a reason why paper-and-pencil predictors of Army recruiter effectiveness may have met with such little success was that not enough was known about the performance requirements of the recruiter job. This study

focused on discovering these performance requirements by attempting to define the underlying task dimensions associated with Army recruiter and guidance counselor jobs.

The first step was to revise an existing Department of the Army task list that described the occupational designator 00E Military Occupational Specialty (MOS). Army recruiters and guidance counselors share this MOS because their jobs are similar. The recruiter's job is to get people to enlist. The guidance counselor's task is to convince them to reenlist. The Army maintains lists of tasks performed in most MOSs. With the assistance of Army recruiting personnel, the authors shortened the existing task list, or inventory, by removing outdated items and combining others that were similar.

After a pilot test, the revised task inventory was administered to 101 field recruiters, guidance counselors, and supervisors across all five recruiting regions. These 101 people, who were familiar with the recruiter and guidance counselor jobs, sorted the tasks into groups, or dimensions, according to the tasks' perceived similarity with respect to job function. Participants worked on their own, each sorting task statements into categories.

Before analyzing the data, researchers tested the extent of agreement in solutions by dividing participants into various subgroups: recruiter and guidance counselor groups, District Recruiting Command (DRC) subgroups, etc.

Once consistency in responses across subgroups was established, the data were collapsed across all subjects and analyzed. The two types of analyses performed were multidimensional scaling (MDS) and a Ward and Hook clustering procedure.

Results indicated that people in the different DRCs agreed substantially among themselves about the pattern of similarities among tasks. Guidance counselors and recruiters agreed closely, and supervisory personnel saw much the same pattern of task similarities as those they supervised. Since no serious disagreements in responses existed, the solutions were collapsed across the entire sample, and a summary list of task dimensions was formed (see Table 1). This composite list contained four broad dimensions defining general task areas associated with the recruiter's and guidance counselor's role in the Army recruitment process.

Borman et al., believed these dimensions would be useful in developing selection procedures for potential Army recruiters. They believed the content of the dimensions would suggest the types of personal characteristics and attributes necessary for effective recruiter performance. Then, paper-and-pencil measures of these attributes could be chosen or developed as indicators of potential for top-level performance in Army recruiting work. The authors also suggested that the dimensions could serve as performance

TABLE 1

Composite List of Task Dimensions

I. Prospecting Activities

Identifying and contacting qualified prospects.

- using existing name sources to generate lists of prospects
- contacting prospects
- dealing with centers of influence and other persons in the schools and in the community for the purpose of gathering prospect names
- obtaining referrals

II. Publicizing the Army

Building a positive Army image in the community by setting a good example and by providing favorable publicity for the Army and Army enlisted programs.

- conducting Army publicity programs in the schools or in the community
- working with the news or other media to obtain favorable publicity for the Army
- performing community services and working with community groups to enhance the Army's image
- preparing and delivering presentations about the Army to civic organizations, at career counseling sessions, or at recruiting seminars

III. Selling the Army

Getting individuals to join the Army by counseling them, explaining Army benefits and opportunities to them, and presenting the advantages of Army life.

- describing aspects of Army life, benefits, and opportunities to prospects
- conducting interviewing or counseling sessions with prospects to sell them on the Army
- answering questions about the Army and about enlistment; overcoming objections to joining the Army service
- sizing up individual prospects and tailoring the interview to help sell Army

TABLE 1

Composite List of Task Dimensions (Continued)

IV. Administrative Activities

Working with recruiting reports, records, statistics, etc., and organizing recruiting activities.

- preparing, maintaining, and reviewing enlistment reports
- planning recruiting activities: performing market research, zoning recruiting areas, etc.
- maintaining recruiting statistics and records
- maintaining recruiting publications

[Ref. 7]

rating scales in future selection research intended to ensure that selection procedures chosen were, in fact, validly identifying persons with good potential for Army recruiting. (This study did not identify personal characteristics and attributes of successful Army recruiters; however, Borman is currently working on a project to develop performance-based rating scales for Army recruiters similar to work he did for the Navy in 1976.)

3. Graham, Brown, King, White, and Wood

An Army Research Institute study describes structured interviews conducted with 79 Army recruiters to obtain information on the nature of recruiting duty [Ref. 8]. The sample was selected to represent recruiters with high, medium and low records of success, in terms of percentage of quota achieved. Information collected from the interviews was used to develop hypotheses on the personal characteristics and job behaviors associated with recruiter success. These hypotheses would be evaluated more rigorously in later research.

Interviews solicited the following types of information from recruiters: background characteristics, suggestions about recruiter training, the value of various prospecting and selling techniques, workload, attitudes toward the job, personality characteristics that might be related to recruiter effectiveness, and descriptions of successful and unsuccessful recruiters they knew. Responses

were coded, categorized, and analyzed to show: (1) personal characteristics and job behaviors related to recruiter production records and (2) personal characteristics and job behaviors attributed (by the respondents) to successful and unsuccessful recruiters they knew.

The criterion used as a productivity measure was the percentage of the total non-prior service (NPS) quota achieved in a six-month period. The authors realized the limitations of this measure, but felt it was the best obtainable within their time and money constraints.

Recruiters were placed into criterion groups of high, medium and low producers based on production data. Interview responses were coded into broad categories. Relationships between interviewee responses and their production records were explored in two ways:

a. Comparison of high and low producers (chi square test). The authors hypothesized that high and low producers' scores would differ significantly in many categories.

b. Correlations between presence in a category and production records. Each recruiter was assigned a score of 0 or 1 based on whether or not he was described by a response within that category. Category scores were correlated with the production criterion to determine relationships between response categories and the criterion.

The authors warned that this pilot study used a small sample that may not have been representative of recruiters in general, and that their findings should be

regarded as indications of possible significant relationships whose validity would need to be assessed by future research.

Few of the characteristics in the self-description data were significantly related to production records. Some of the study's findings are listed here.

a. Attitudes Toward the Job - "Likes independence" correlated significantly and negatively with job success ($r = -.24$), suggesting that high producers were less likely than low producers to cite "independence" as a source of job satisfaction. Recruiters who commented on their dislike of "long hours," "the frustrating nature of the job," etc., tended to be more productive than those who did not make those comments.

b. Prospecting Techniques - According to successful recruiters, this is one of the most important components of the job. The objective is to bring the recruiter into direct personal contact with potential enlistees. Successful recruiters emphasized that they spent many hours daily in prospecting activities. Two response categories, "Uses systematic approach" and "Uses Pre-induction physical cards, mail-outs, etc.," were statistically significant.

c. Selling Techniques - The ability to motivate a person to enlist is believed to be an important characteristic of the successful recruiter, yet none of the selling techniques mentioned by recruiters interviewed were significant.

d. Communications Skills - A highly successful recruiter must be able to communicate effectively. One category, "Has difficulty communicating effectively" correlated negatively and significantly with the production criterion. Thus, high producers admitted having communication problems less often than low producers.

e. Industriousness - The pilot study did not reveal much information in support of the idea that hard work is essential for successful recruiters. Although several recruiters described themselves as "motivated"

or as "self-starters," these responses were not significantly related to high or low production. Only one response category, "Keeps informed on everything relevant to job," differentiated significantly between high and low producers.

f. Miscellaneous Personality Traits - "Empathetic" correlated negatively and significantly with the production criterion. The authors suggested that empathy seemed to be a highly valuable characteristic for a recruiter, yet it correlated negatively with success. McMurry suggested that high empathy may be a handicap to a salesperson unless it is accompanied by a strong ego drive or will to win [Ref. 8:p. 21].

During the interviews, each recruiter was asked to think of one successful and one unsuccessful recruiter he knew and answer questions about the two recruiters' work attitudes, job skills, personality traits, etc.

The authors believed many recruiters' responses were actually elements in a stereotype of the good recruiter, which they may have acquired in training or elsewhere, and not based on actual observations of the nominee. They were not surprised by the data and believed this peer nomination data should be regarded as recruiters' opinions of what it takes to be a good recruiter rather than descriptions of good and poor recruiters. The recruiters' conceptions of the successful and unsuccessful recruiter are included in Table 2 for information. (Note: Data on successful and unsuccessful recruiter nominees were provided by the same respondents. As a result, the chi-square statistic exaggerates the significance of the difference between the two groups.)

TABLE 2

Characteristics Differentiating Successful and Unsuccessful Recruiters: Peer Nomination Data

Category[a]	Nominees (in Percent) Successful (N = 79)	Unsuccessful (N = 79)
Motivations For Becoming a Recruiter		
Dislike for present assignment	9	43
Prospecting Techniques		
Uses systematic approach	52	1
Stresses person-to-person contact	62	19
Uses high school CIs	31	2
Uses other CIs	9	0
Uses PIP cards, mail-outs, etc.	24	5
Becomes involved in community	35	6
Passively waits for prospects to walk in	2	49
Emphasizes peripheral duties	1	32
Emphasizes outside interests	1	14
Selling Techniques		
Uses miscellaneous effective sales techniques	24	4
Uses miscellaneous ineffective sales techniques	0	11
Communication Skills		
Able to communicate effectively	39	14
Has difficulty in communicating effectively	0	18
Job Attitudes		
Likes the work	86	20
Likes the challenge of the job	17	0
Dislikes the high pressure	19	34

TABLE 2

Characteristics Differentiating Successful and Unsuccessful Recruiters: Peer Nomination Data (Continued)

Category[a]	Nominees (in Percent) Successful (N = 79)	Unsuccessful (N = 79)
Job Attitudes (Continued)		
Dislikes other features	3	25
Wants another type of duty	10	53
Industriousness		
Has high achievement motivation	18	3
Has low achievement motivation	4	47
Is very conscientious	35	3
Is careless about details	1	19
Seeks ways to improve	8	0
Keeps informed on everything related to job	18	4
Miscellaneous Personality Traits		
Friendly, easygoing	53	4
Outgoing	44	0
Sympathetic	20	0
Stable	13	0
Happy, humorous	11	0
Light-hearted	10	0
Sincere	10	1
Withdrawn	1	17
Shy, self-conscious	1	17
Lacks self-discipline	1	14
Has family problems	1	13
Inconsistent	0	14
Hostile	0	13
Emotionally immature	0	10
Resentful, rebellious	0	10

[a]All categories included in this table differentiated the two groups of nominees at the .05 level of significance or beyond, using the chi-square test.

(Ref. 8)

(The more general the characteristic and the more congruent with stereotypes of the good and bad recruiter, the more frequently it was mentioned.)

Some questions in the interview asked the recruiters for their opinions about recruiter selection. A summary of responses the recruiters mentioned most often and the percentage of those responding appears in Table 3.

4. Hirabayashi and Hersch

A recent effort attempted to document characteristics of excellent Navy Recruiting Districts [Ref. 9]. The authors visited and interviewed key individuals assigned to these and other Navy recruiting activities. Interviews were representative of the Navy Recruiting Command: current and previous Recruiting Command commanders, commanding officers, executive officers, department heads, recruiters, recruiters' supervisors, trainers, and more. Based on the results of the interviews, the following list summarizes the characteristics of successful recruiters.

Successful Navy Recruiters:

- are movers, shakers, and salesmen
- are hungry for success and/or promotion
- are aggressive, want responsibility, and want to excel
- possess outstanding communications skills, a fundamental knowledge of recruiting, and an inherent skill to deal with numbers, sales, and the public
- are ambitious, extroverted, and like to meet and talk to people
- are positive, cheerful, enthusiastic, and self-motivated.

TABLE 3

Recruiters' Opinions Regarding Recruiter Selection

Response	Percentage
Should be able to talk to people	49
Should have well-groomed appearance	33
Should want to do the job	30
Screen for quality of past performance	28
Should have "substantial" length of service	24
Should enjoy working with people	20
Should be stable in finances	16
Should have sales experience	13
Should be adaptable	3
Tell them what recruiting is really like	11
Provide two months of OJT	11
Should be outgoing	10

(Ref. 8)

B. TEST BATTERIES

1. Wollack and Kipnis

These authors developed a test battery to determine its possible usefulness in Navy recruiter selection [Ref. 10]. The battery's thirteen tests and inventories measured fluency of expression, knowledge of the Navy, interest in recruiting activities, and general aptitude.

The study used commanding officers' nominations of effective and ineffective recruiters as the criterion measure of performance. Items that differentiated between effective and ineffective recruiting beyond the .20 confidence level were retained for cross-validation.

Although few of the battery's items and scales cross-validated significantly, the study's results suggested that inventories showed promise as indicators of recruiter effectiveness. Borman suggested that the poor cross-validation results may have occurred because raters made their evaluations of recruiters based on reputation instead of performance or because many of the individual differences that predict recruiter success were not included in the battery. [Ref. 3:p. 4].

2. Massey and Mullins

Only one Air Force study appeared in the literature reviewed. Massey and Mullins (1966) developed an eight-inventory battery to measure qualities such as empathy,

surgency (friendliness and sociability), and perseverance, all hypothesized to be desirable in recruiters [Ref. 11].

Predictor variables were correlated with school success and supervisor field ratings. Results after cross-validation indicated that the battery would be useful only marginally in predicting school performance and not at all in predicting field ratings. The authors believed the supervisor rating criterion had caused the poor results, suggesting that it was contaminated by several rater errors such as "halo" and "leniency" effects. They advocated the development of a more reliable and valid measure of recruiter effectiveness.

3. Krug

In this study, a personality test is developed and administered to officer and enlisted Navy recruiters to determine its usefulness in predicting sales ability [Ref. 12]. The test, the 16PF-m, was a variation of the 16PF, a highly regarded personality inventory widely used by business and industry in sales selection [Ref. 13:p. 22].

In addition to the 1967 version of the 16PF questionnaire, the 16PF-m included a supplement designed to measure motivational distortion (a lie scale) and strength of motivation to succeed as a recruiter, and seven biographical items: years of service, age, sex, marital status, number of dependents, years of formal education, and population of subject's Home of Record.

Commanding officers' nominations of recruiters from the top and bottom fifty percent of those on recruiting duty at the time were used as the criterion measure of performance. Stepwise multiple regression resulted in a multiple regression coefficient of .40 ($p < .01$). In cross-validation, the multiple regression coefficient was .25 ($p < .05$). Results indicated that the typical effective Navy recruiter was married, had more years of formal education, and tended to be warm, outgoing, dominant, aggressive, and self-assured, with relatively conservative political views.

The Navy Recruiting Command used this battery to screen people for recruiting assignments for approximately four years between 1972 and 1976. Active duty Navy personnel took the test if they were being considered for a recruiting assignment. Those who scored below thirty-five were considered unqualified for recruiting duty. (A score of sixty-five was recommended by the study team and was predicted to be seventy-two percent accurate, but the Navy Recruiting Command chose to use a score of thirty-five.) Use of the test was discontinued when Navy Recruiting Command and the Chief of Naval Personnel (Pers 502) agreed it did not predict sales ability effectively [Ref. 13:p. 24].

In his 1976 study, Arima stated the 16PF had little or doubtful utility in the selection process due to the

absence of a reliable and valid criterion [Ref. 14]. He called for job analysis and behaviorally-anchored rating scales.

> The development of a recruiter selection procedure must be preceded by a thorough analysis of the position that will show the functions performed and the relative importance of the functions. It will also be necessary to obtain knowledge as to the types of behavior that are necessary to carry out these functions successfully and the types of behavior that are detrimental. There is nothing new in this approach . . . developing behaviorally anchored rating scales could provide the desired list of behaviors. Knowledge of the job . . . should provide the material to develop a recruiter selection procedure. [Ref. 14:p. 129].

4. Larriva

The 16PF-m was applied to a sample of Marine Corps recruiters in a concurrent validity study in 1975 [Ref. 15]. Annual non-prior service accessions were used as the criterion measure of performance. The test did not predict well, and Larriva suspected the criterion he used had caused the problem. He experimented with several performance indices, examined predictor criterion relationships, and chose the index that resulted in the most valid multiple correlation coefficient. This index separated urban and rural recruiters and corrected for geographic differences in relative performance of recruiters. Cross-validation suggested the 16PF-m might be useful in screening for the Marine Corps recruiter job [Ref. 3:p. 8].

Borman et al. objected to Larriva's method of criteria selection, saying that a more acceptable (and

justifiable) method would have been to define a precise criterion first and then select a measure that would provide relevant and reliable measurement of the criterion without regard to the predictors [Ref. 3:p. 9].

5. Abrahams, Neumann, and Rimland

In 1973, the Strong Vocational Interest Blank (SVIB) was used to develop a Recruiter Interest Scale (RIS) for use in selecting Navy recruiters. Items that differentiated between the most and least effective recruiters, based on commanding officers' nominations, comprised the RIS-1, which was used for cross-validation. The top quartile (highest RIS scores) contained three times as many effective recruiters as did the bottom quartile. The bottom quartile had three times as many ineffective recruiters as the top quartile. Although the authors stressed that a better criterion of recruiter effectiveness was needed and that other recruiter performance factors should be considered in future validity research, their study suggested that vocational interests might successfully predict recruiter effectiveness. [Ref. 16]

6. Graf and Brower

In 1976, these authors also had some success with a version of the Navy RIS modified for Marine Corps recruiters. Although the Marine Corps Recruiter Interest Scale (MCRIS) resulted in a higher validity coefficient than the Navy scale for the Marine Corps sample, the MCRIS was

not cross-validated, which made direct comparisons impossible. Although the authors had used recruiting officers' nominations of above-average, average, and below-average recruiters as their criterion measure, they called for a more reliable method of measuring recruiter performance. [Ref. 17]

7. Borman, Hough, and Dunnette

The most extensive work found in this area is a test battery developed by the Navy Personnel Research and Development Center (NPRDC). This work has evolved through four studies over the past ten years.

NPRDC's work began with the development of behaviorally-based rating scales which attempted to identify better performance criteria than had been developed in the past for measuring recruiter effectiveness. Researchers believed that acquiring valid information about recruiter effectiveness meant that a thorough job analysis and criterion development effort would have to be accomplished. Their first study, published in 1976, identified more than 800 critical incidents describing different facets of effective and ineffective recruiter performance. The study's suggested predictors of Navy recruiter effectiveness appear in Table 4. [Ref. 6]

The second phase of NPRDC's research involved development and validation of an inventory battery to predict Navy and Marine Corps recruiter performance. Their

TABLE 4

Suggested Predictors of Navy Recruiter Effectiveness

PREDICTORS

PERFORMANCE CATEGORIES	SDI	SCII	COGNITIVE MEASURES	PRF	BIOGRAPHICAL INFORMATION	NAVY KNOWLEDGE TEST	PERFORMANCE REVIEWS
A. Locating and Contacting Qualified Prospects	.Initiative .Decisiveness	.Athletics .Public Speaking .Law/Politics	.Fluency Measure	.Social Recognition .Aggression .Autonomy	.Clubs and Leader Jobs in School		.Innovativeness
B. Gaining and Maintaining Rapport	.Working Class Affinity	.Personnel Director .Social Worker .Social Service		.Affiliation .Exhibition .Nurturance .Understanding	.Boy Scout Experience .Public Contact Jobs		.Human Relations
C. Obtaining Information from Prospects and Making Good Person-Navy Fits	.Intelligence .Working Class	.Teaching .Law/Politics	.Vocabulary .General Information	.Cognitive Structure	.Length and Range of Navy Experience	X	.Using Information
D. Salesmanship Skills	.Power .Self-assurance .Decisiveness	.Sales Occupations .Enterprising Theme	.Vocabulary	.Achievement .Social Recognition .Dominance .Exhibition .Sentience	.Previous Selling		.Persuasiveness
E. Establishing and Maintaining Good Relationships in the Community	.Maturity	.Social Service .Chamber of Commerce Executive .Social Theme .Merchandising		.Affiliation .Nurturance	.Match between Assignment and Type of Town Grew Up In		
F. Providing Knowledgeable and Accurate Information about the Navy	.Intelligence	.Military Activities .Counselor Jobs	.Vocabulary .General Information			X	.Honesty
G. Administrative Skills	.Supervisory .Decisiveness	.Conventional Theme .Business-Accounting .Business Management .Office Practices	.Clerical Aptitudes	.Change (negative) .Endurance .Order .Play (negative .Impulsivity (negative)	.Courses Liked Best .Liking versus Disliking Detail and Record Keeping		.Organizing .Planning .Detail Mindedness
H. Supporting Other Recruiters and the Command	.Maturity .Self-actualization	.Social Theme .Social Service		.Abasement(negative) .Affiliation .Social Recognition	.Team Sports		.Cooperativeness .Friendliness

(Ref. 6)

review of the literature provided candidate predictors that might be good indicators of future recruiter effectiveness, including vocational interests, interest inventories, background or biographical variables, and personality or trait measures. Recruiter abilities appeared unrelated to recruiter performance. Intelligence and other types of ability measures generally failed to predict recruiter success. [Ref. 3]

Based partly on their literature review and the results of their rating scales study, NPRDC developed a trial predictor battery that included several personality, vocational interest, and biographical items and scales. Battery scores were correlated with performance scores developed from supervisory, peer, and self ratings and from six months of adjusted production data. (Standard scores were developed for each recruiter for each month by standardizing each month's production data within each Navy Recruiting District (NRD). This was an attempt to account for differences in recruiting opportunity across geographical locations.)

NPRDC's third study was designed to expand and refine the original test battery and determine its validity in predicting recruiter performance. The revised battery was analyzed to determine the precision of new items in measuring desired constructs and whether they had improved the validity of the original test battery. Composites of

the added items enhanced the validity of the old battery's constructs in about half the cases. Scales derived from the constructs validly predicted recruiter effectiveness. [Ref. 18]

NPRDC's final Special Assignment Battery consisted of three parts: the Strong-Campbell Interest Inventory, a self-description inventory, and a background questionnaire. Recruiter potential was measured through a selection composite composed of four subscales: selling skills, human relations skills, organizing skills, and overall performance. Scores on each of these four "keys" were correlated with each recruiter's production data. Table 5 displays validity figures for predicting production. Three of four figures are statistically significant.

When the four separate scores were summed into a composite, the correlation coefficient between the composite and production was .27. Figure 2.1 depicts the practical significance of this relationship. Sixty-six percent of the recruiters scoring in the top 20 percent were in the upper 50 percent in production, compared to 34 percent of those scoring in the lowest 20 percent.

Several personality constructs correlated highly with various aspects of recruiter effectiveness. "Making a good impression" and "Enjoying being the center of attention" correlated highest with selling skills. "Spontaneity, impulsivity" and "Ambitious, working hard"

TABLE 5

Validity of Final Keys for Predicting Production

(N = 194)

Predictor Key	Correlation with Production
Selling Skills	.22*
Human Relations Skills	.23*
Organizing Skill	.13
Overall Performance	.26*

*$p < .01$.

(Ref. 18)

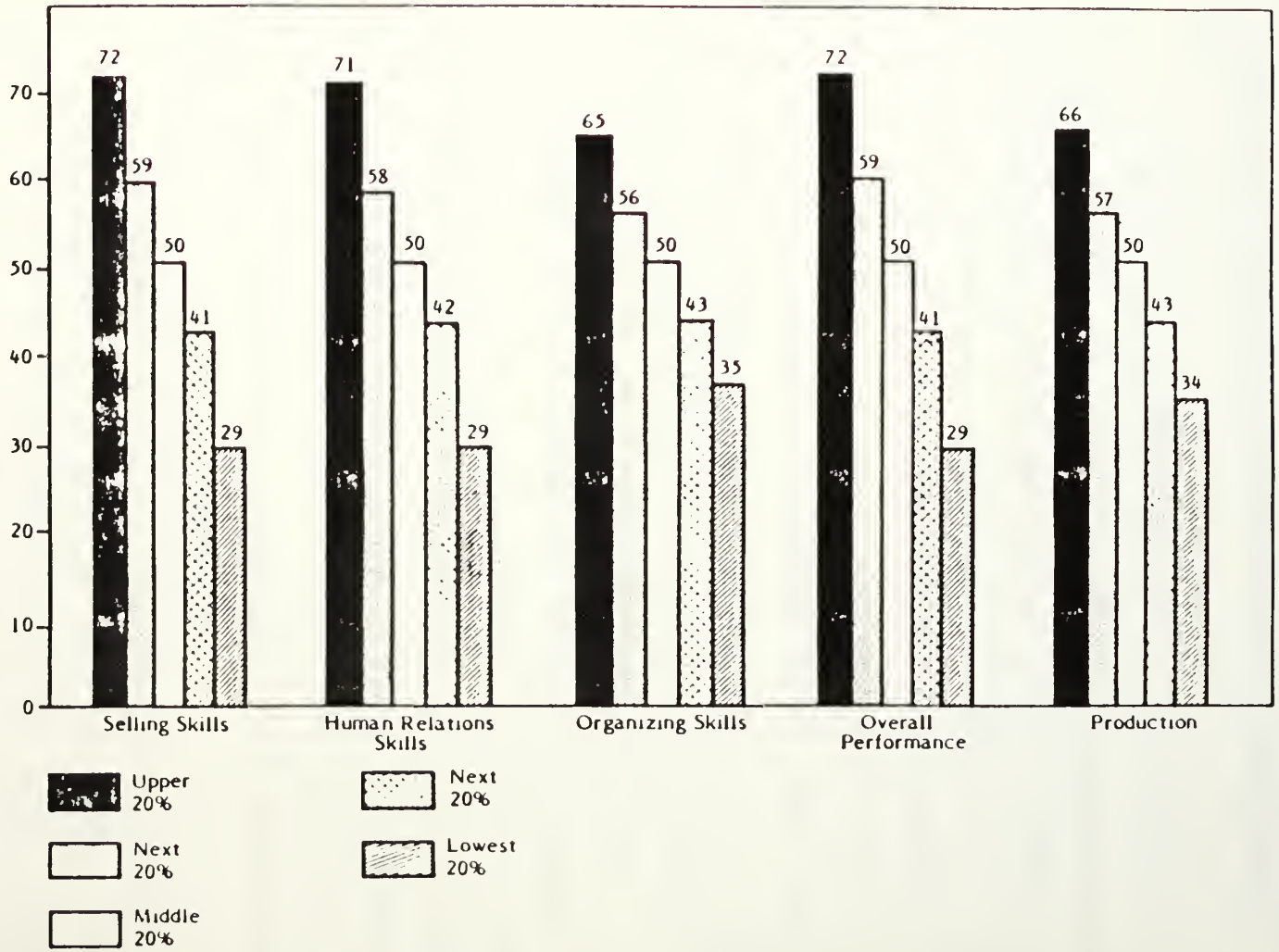

Figure 2.1 Percent Successful Recruiters Expected Where Upper 50 Percent are Considered Successful. (Ref. 18)

correlated highest with the human relations skills category, while "Unhappy, lack of confidence" related negatively to human relations effectiveness. "Order, planning ahead" related well to organizing skills, and "Leading and influencing others" was the construct that correlated most highly in the overall performance category. The vocational interest constructs that correlated highly with performance criteria were interests in extroverted, dominant, social, and leadership activities and occupations, interests in sports and competitive activities, and interests in law and political activities.

The fourth phase of NPRDC's work, published in 1985, strongly confirmed the findings of the earlier studies. In concurrent and predictive studies, Marine Corps recruiters whose scores were in the top 20 percent obtained 27 and 40 percent more recruits, respectively, than recruiters who scored in the lowest 20 percent. [Ref. 19]

8. Brown, Wood, and Harris

An Army Research Institute study, published in 1978, had two objectives: (1) develop a valid criterion of recruiter effectiveness and (2) develop a test battery to identify those most likely to succeed as recruiters [Ref. 5].

The authors believed production scores were not a useful criterion because they were contaminated by "opportunity bias" caused by characteristics that influenced

the "fertility" of a recruiting territory but were outside the recruiter's control.

Army researchers and recruiters identified 15 factors that might cause opportunity bias, such as the unemployment rate in the territory, average number of enlistments per recruiter in the recruiter's District Recruiting Command (DRC), amount of recruiting experience, etc. A sample of 500 recruiters was chosen randomly, 100 from each of five Army Regional Recruiting Commands nationwide. Six months' production figures were provided for each recruiter.

Stepwise multiple regression was used to predict the theoretical yield of a recruiter's territory using 12 of the 15 territorial factors in the equation (three census variables were excluded). The three best predictors were "Average production per recruiter in subject's DRC," accounting for 48 percent of the variance in production scores; "Average market share for station zone"; and "Proportion of the zone that is suburban."

These three predictors, which accounted for 51 percent of the variance in production scores, were used to predict production scores for each recruiter. Benchmark Achievement Scores (BAS) were computed by dividing total production by predicted production and multiplying by 100.

The BAS were thought of as unbiased production scores, corrected for the effects of three important territorial factors.

The authors suggested that another production measure, the Simple Achievement Score (SAS), might be just as useful as the BAS. Since "Average Production Per Recruiter in Subject's DRC" explained the most variance in the regression equation, a score based on the individual's performance compared to that average would be easier to compute. (SAS correlated highly with BAS (r = .96), so the two scores were practically equivalent.)

The second objective of this study was to develop a recruiter selection battery. The battery was developed based on the pilot study by Graham et al. [Ref. 8] involving interviews with 79 Army recruiters with high, medium, and low records of success. Personnel from Army Recruiting Headquarters were also consulted about traits necessary for recruiter success.

The selection battery consisted of 12 paper-and-pencil inventories and one verbal performance test. Below is a list of the measures included in the battery.

a. Verbal Fluency. Recruiters were asked to make a sales pitch to a prospective enlistee about the benefits of Army life. Presentations were scored by computing the ratio of the number of words spoken in two minutes to the number of "ahs" spoken. The authors hypothesized that an effective recruiter must be able to talk easily in a variety of social situations, and they wanted to measure verbal fluency orally, in the most realistic situation possible.

b. Sociability Measures. Four inventories were used to measure a recruiter's sociability and affiliative tendency. The authors hypothesized that sociability was important since a recruiter must spend so much time interacting with people (who often are strangers).

c. Achievement Motivation. Three inventories were used to measure the tendency to work hard to achieve self-appointed goals. This was hypothesized to be a positive characteristic of a good recruiter.

d. Empathy Measures. Four instruments were used to measure the ability to understand the point of view of others and the drive to win or complete a sale. The authors believed empathy alone is not enough. The successful recruiter goes on to close the sale.

e. Rejection Tolerance Measure. One inventory was used to measure tolerance to rejection, rebuffs, and insults. The hypothesis was that the successful recruiter has a higher tolerance for rejection than does the less successful recruiter.

f. Responsibility and Maturity Measures. Three instruments collected information about a recruiter's ability to manage his personal, financial, and official duties. Since recruiters spend the bulk of their duty time working without supervision, and since they represent their branch of service to the general public, they are expected to manage their personal, financial, and official duties with discretion.

When the time came to administer the battery, the criterion development project mentioned earlier (BAS and SAS) was not yet completed. Instead, the authors created a Composite Supervisory Rating procedure to select highly successful and very unsuccessful recruiters. Recruiters were nominated by supervisors. The best were used in the High Criterion Group, and the poorest were used in the Low Criterion Group. The battery was administered, and information on each recruiter's race, religion, and aptitude scores was obtained from Army personnel files.

None of the personality measures or aptitude scores differentiated significantly between the two groups. The verbal performance test and 22 other items differentiated significantly ($p < .10$). These items pertained to work habits, style of handling finances and debts, educational background, and reactions to challenging or stressful situations.

The authors suggested that because recruiters are a relatively homogeneous group required to meet several minimum qualifications (age, rank, GCT scores), and because of their length of time in service (mean was 14 years), the recruiters may have had similar attitudes and opinions, which would have limited the variance in attitude, personal preference, and personality inventory scores. (The few items that did discriminate were mostly from the Background Information Form and Personnel Questionnaire, instruments dealing mainly with matters of fact rather than attitude.)

In his review of this study, however, Borman suggested the low relationships between predictors and the criterion could also have been the result of the criterion measure used. Had the authors been able to use the Simple Achievement Score (SAS) they had suggested, rather than supervisor nominations, higher validities might have resulted. [Ref. 3:p. 13].

Although 20 variables were significant in this study, they were not cross-validated. Nonetheless, the authors were encouraged about the possible utility of the variables in future work.

C. ASSESSMENT CENTERS

1. Borman et al.

In 1982 the assessment center concept was added to the Army recruiter training process. Assessment centers are believed to be particularly valuable for selection of individuals for sales positions, and military recruiters are essentially salespeople. Since assessment centers usually involve parts of an actual job under observation, they are equally adaptable for training for these jobs. [Ref. 20]

Borman investigated the use of assessment centers to select Army recruiters and decided the approach had promise [Ref. 21]. Under this approach, trained observers rated potential recruiters' performance in several different situational exercises that simulated aspects of the recruiter job. Assessors were interested in personal characteristics such as persuasiveness, sociability, flexibility, and practical judgment.

Results showed that this method could successfully predict recruiter school performance even with a sample of recruiters that had been pre-screened by a selection panel.

The assessment center concept is based on the assumption that people being rated want the job. Yet, requirements for recruiters have grown, forcing the Army to assign most of its recruiters involuntarily. This made infeasible the use of assessment center ratings to select recruiters. The Army's problem had become one of motivation and development rather than selection. So, the purpose of the assessment center shifted.

Assessment exercises were cut dramatically. Instead of being used for selection, ratings given in a revised Recruiter Development Center were designed to give recruiter trainees a realistic job preview and the positive feedback they needed to enhance their motivation.

2. Weltin et al.

This study related the ratings of the original assessment center and a subsequent development center sample to the number of contracts the new recruiter produced in the first year on the job. The criterion measure accounted for geographic differences in sales potential among recruiting battalions. [Ref. 22] Previous work by Brown et al. [Ref. 5] showed that production per recruiter in the subject's battalion (district) accounted for 48 percent of the variance in production scores. Some Army recruiting battalions have better sales markets than others. To control for these geographic differences in sales potential, Weltin et al., partialed the number of contracts per

recruiter achieved in his battalion of assignment from each recruiter's performance score. While Borman's work related assessment center ratings to training performance, this study evaluated the usefulness of the ratings for predicting job performance as a field recruiter.

The assessment center sample included 41 of 57 soldiers who had taken the original battery of assessment center exercises in 1981 and completed the training course. Each individual had been rated by trained assessors in exercises that included cold calls, interviews, a speech, and the in-basket (work prioritization). Other predictors included training school grades (written test scores and instructor ratings of telephone and interviewing techniques), and scores on the following: a test battery developed to select Navy recruiters, an experimental Army test battery, and the Gordon Personal Profile and Inventory.

The development center sample included 970 recruiters who were rated in the center, completed training, and had at least one contract their first year on the job. Assessors were not trained. Essentially the same exercises were used as in the assessment center. No personality or interest batteries were used. Written training grades were available, but instructor ratings on telephone and interviewing techniques were not.

Results indicated that the assessment center ratings had low correlations with job performance; however, in the

development center sample, the cold call/interview and speech exercises were significant. Training grades were not predictive in either sample. The personality and interest test scores significantly predicted job performance. Navy test scores (human relations, selling, and organizing subscales), the ARI test, and two scales of the Gordon Personal Profile and Inventory showed moderate relationships with job performance.

Stepwise regression performed on the development center sample indicated that productivity of the recruiter's battalion was the single most important factor in predicting job performance. Ratings on the speech exercise and AFQT scores predicted approximately two percent additional variance.

The authors suggested that the sizes of individual correlations should be interpreted cautiously due to the small size of the assessment center sample, differences in rater training, and Assessment Center changes. They also noted that the assessment center ratings showed some utility as predictors of recruiter performance on the job.

D. BIOGRAPHIC/DEMOGRAPHIC VARIABLES

1. Bennett and Haber

In 1973, these authors investigated various factors that influence the productivity of Marine Corps recruiters [Ref. 23]. They used multiple regression to analyze the

relative importance of sixteen variables on gross productivity (average number of recruits enlisted per month). Variables were divided into three categories. Selection variables included General Comprehension Test scores, age, race, level of education, number of dependents, previous service as a career planner or drill instructor, method of assignment to recruiting duty (volunteer or assigned), and opinion about whether recruiting duty was a financial hardship. Deployment variables included whether recruiters were assigned to their home states, distance from home state, type of area assigned to (urban, suburban, or rural), number of times assigned, hours per week spent on recruiting, and percentage of time spent out of the office recruiting. Evaluation variables included number of months on current tour of duty and percentile rank in Marine Corps Recruiter Class.

The authors noted that gross productivity was determined by regional differences as well as differences in individual recruiters. To account for regional differences, they broke their sample of recruiters into two groups, one from recruiting stations with high enlistment rates, and the other from stations with low rates of enlistment.

Several variables were statistically significantly related to productivity. Results from the high enlistment area group indicated that urban and suburban recruiters enlisted more people per month than rural recruiters, and

recruiters in their home state enlisted more people per month than those stationed more than 500 miles outside their home state.

In the low enlistment areas, those who felt recruiting duty was a financial hardship enlisted more people per month than those who did not. Recruiters with prior service as career planners were more productive than those who had no experience as career planners. The regression equations were not cross-validated.

2. Best and Wylie

These authors hypothesized that recruiter characteristics could be combined to predict recruiter performance [Ref. 24]. To test their hypothesis for Navy recruiters, they used a command evaluation of each recruiter in their sample as their dependent variable. Special consideration was given to selecting independent variables that could be obtained easily for each prospective recruiter prior to a recruiting assignment.

The authors generated a cross-tabulation of the independent variables they had selected initially, and they retained for analysis those variables with the strongest relationship to the dependent variable. Those variables were: the area where the recruiter had spent his youth (urban, suburban or rural); age; General Comprehension Test (GCT) score (part of the Armed Services Vocational Aptitude Battery (ASVAB)); years of active military service; and

proximity of childhood home to a major body of water, grouped into three distance categories (less than 20 miles, 20-200 miles, and more than 200 miles).

The regression equation accounted for 34 percent of the variation in the dependent variable ($R^2 = .34$), and the equation was statistically significant ($p < .05$) for the original sample. Although the equation failed on cross-validation, the authors believed research using this approach should continue. The only predictor in use by the Navy at this time was the 16PF-m. As mentioned earlier, this test battery was a poor predictor of recruiter success, and the Navy stopped using it for recruiter selection in 1976 [Ref. 13:p. 24].

3. Shupack

This author attempted to develop a profile of a successful recruiter comprised of a combination of objective personal characteristics easily obtainable from existing personnel records [Ref. 13]. She regressed six independent variables against a dependent variable designed to identify success, mediocrity, and failure in the recruiting assignment. The independent variables were paygrade, education, years of service, Navy enlisted entrance test scores, rate, and scores on the 16PF-m. Her measure of effectiveness was defined in terms of Navy Recruiting Command's Honor Roll (five enlistments per month). Successful performance was defined as completion of the

twenty-month test period and some level of Honor Roll performance. Mediocre performance was defined as remaining in the field for the test period, and failure was being transferred early.

Using multiple regression on the whole sample and on various subgroups, the explanatory factors explained a low fourteen and twenty-one percent of the variance in the case of successful and unsuccessful recruiters, respectively. A better criterion measure of production probably would have given Shupack's model more explanatory power. Education, paygrade, and entrance test scores explained the most variance among successful recruiters. For unsuccessful recruiters, the best predictors were rate, years of service, and entrance test scores.

4. Elig et al.

In a 1983 working paper, these authors described a "new approach to recruiter selection research" [Ref. 4]. They suggested that previous selection approaches (biographical information, personality assessment, and interest inventories) were vulnerable to compromise and probably would not be useful when recruiters were selected involuntarily. They also commented on the "criterion problem," saying that most researchers had not found an adequate performance measure.

With these criticisms in mind, along with the fact that the All Volunteer Army's recruiters had become a largely non-volunteer force, the authors' research sought two things:

a. Predictors that were readily available, stable, and secure measures of recruiter characteristics, and

b. Criteria that were readily available, objective performance measures which differentiated among recruit characteristics, secure and were relatively free from "opportunity bias."

The authors used the Enlisted Master File (EMF) as their data source for recruiter demographic characteristics and the Military Enlistment Processing Station Reporting System (MRS) to acquire information on recruit characteristics. Both types of data are maintained routinely by the Army.

The authors hypothesized that the EMF data would provide measures of recruiter characteristics that would be useful in predicting productivity as measured by recruit characteristics taken from the MRS. They related recruiter characteristics to recruit characteristics, and their criterion was adjusted for opportunity bias. Brown et al. [Ref. 5] accounted for 48 percent of an individual recruiter's total production by using average total production of all recruiters in the individual's District Recruiting Command (DRC) as a predictor. Elig et al., adjusted their criterion by subtracting DRC average production from the raw contract totals of each recruiter in the DRC.

The sample consisted of 552 male and 60 female recruiters on production during FY79. Descriptive statistics were used to analyze recruiters' characteristics. Those characteristics that correlated with contract production were identified using analysis of covariance techniques.

Results of this study indicated that opportunity bias (DRC Average Production) explained 32 percent of the variance in productivity, compared to 48 percent found by Brown et al. The remaining variance was believed to have resulted from unmeasured opportunity bias, individual recruiter differences, and measurement error. All effects listed below were significant to at least the .01 level.

a. Recruiter Education. Recruiters with postsecondary education recruited better educated, but lower AFQT, male recruits.

b. AFQT. Recruiter AFQT correlated positively with recruit AFQT in its "prime" market, high school diploma graduate and senior males (HSDG/SR), and had little impact on females or non-high school graduates (NHSG).

c. Gender. Recruiter gender had no effect on total numbers or quality of recruits.

d. Age. Older recruiters contracted more male and fewer female recruits than younger recruiters. They did this by underproducing high AFQT and overproducing low AFQT recruits in the HSDG/SR market. In total production, younger males outproduced older males, while older females outproduced younger females. As Figure 2.2 shows younger male recruiters outperformed their female counterparts, while older females outperformed all others.

e. Rank. Higher ranking recruiters achieved success in the HSDG/SR market by contracting more low AFQT (category IV) recruits than lower ranking recruiters.

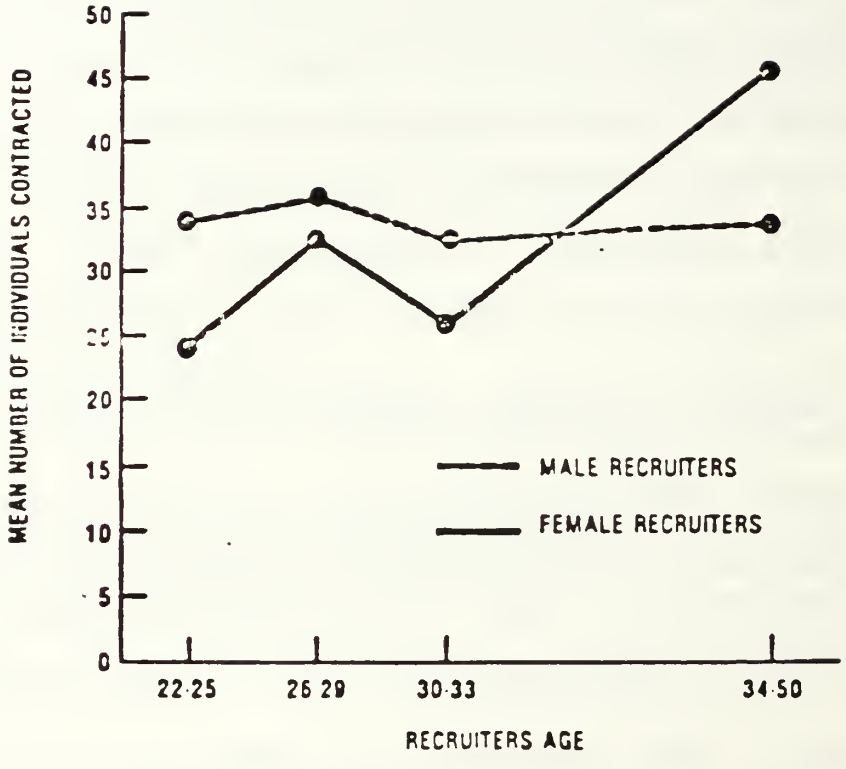

Figure 2.2 Total Non-prior Service (NPS) Contracts by Recruiter's Age and Gender. (Ref. 4)

f. Ethnic Group. Like recruited like. Black recruiters enlisted the most Blacks, Hispanic recruiters enlisted the most Hispanics, Whites the most Whites, etc.

The authors were encouraged by the results of their research. They believed recruiter demographic characteristics can be related to recruit characteristics when opportunity bias is removed, and that demographic data will be useful for selecting recruiters from a non-volunteer pool. Several questions remained. For example:

1. Would these findings be replicated with other samples and in other recruiting environments (e.g., where unemployment is higher)?

2. Why do tradeoffs exist between AFQT and education? Recruiters who penetrated the HSDG/SR market did so at the expense of AFQT.

3. Are these relationships likely to continue? The data in this paper were simple correlations and were not tied to a well reasoned theory. At the end of their paper, the authors mentioned that they would attempt to cross-validate this paper's results and develop a theoretical rationale for them.

E. OVERVIEW

Although the literature review revealed a considerable amount of relevant work, many of the findings were disappointing. The profile of a "successful recruiter" seems to vary from one study to the next. Table 6 summarizes the personal characteristics that prior studies have indicated are significantly related to being a successful recruiter.

TABLE 6

Characteristics Related to Recruiter Success:

Summary of Results

Plans ahead
Uses systematic approach in prospecting
Knowledgeable about recruiting
Sales experience

Age (older if female, younger if male)
Marital status
Education
Paygrade
Length of service
AFQT scores
Racial match

Verbal fluency
Persuasiveness
Communicates effectively

Self-motivated
Ambitious
Desire to excel
Aggressive
Dominant
Confident
Enthusiastic, positive
Mature
Financially stable
Extroverted
Enjoys working with others
Spontaneous
Influences others

Well groomed

Most of the past research on recruiter selection suffered from one or more of the same serious flaws: poor criterion measurement, lack of knowledge of the recruiter job, and failure of results to remain significant upon cross-validation. As a result, findings of many of these studies are of questionable value.

Most recent work has integrated lessons learned from earlier studies. Production measures have become more sophisticated, attempting to account for the powerful influence of "opportunity bias," or the effects of geographic, socioeconomic and organizational variables on individual recruiter productivity. Comprehensive job analysis has provided a greater understanding of what the recruiter's job really is. Astute researchers, recognizing that the military services need different types of selection devices now that most recruiters are not volunteers, have studied the use of passive selection procedures that use existing data and are less subject to compromise. Army researchers have described the shift in the purpose of the assessment center from selection to motivation and development. Yet, despite the increased sophistication of recent work, a reliable profile of the successful recruiter is still not generally agreed upon. Statistically significant findings are scarce, and very few results remain significant after cross-validation.

The Special Assignment Battery developed by NPRDC and the assessment center concept used extensively by the military services as well as private industry have provided perhaps the most encouraging results in recruiter selection research. A major drawback of both methods is their cost. Given our current relentless budget-cutting environment, cost is a major consideration.

The Special Assessment Battery was found to be highly valid when recently cross-validated on a sample of Marine Corps recruiters. Background and personality characteristics and interest patterns appear to be associated with military recruiter effectiveness. But the battery is lengthy and would be costly to administer. If future non-volunteer recruiters who took the battery believed their scores would result in a recruiting assignment, potential sabotage would reduce the tool's usefulness. To minimize the probability of faking responses, personnel could complete the battery well before a time when they would associate it with recruiting duty, such as first reenlistment, and all personnel could be required to take it. But this would require large-scale administration and large related costs.

The assessment center concept is heavily used and relied upon to select salespeople in private industry. The military services use assessment centers as part of recruiter training to indoctrinate and familiarize recruiters on their way to the field, providing them with

the basic skills they'll need in their jobs. But assessment centers can be costly, too. Those who don't complete recruiter training are transferred to other jobs. In addition to wasted transfer dollars caused by the unnecessary move, this may cause some other types of hardship for the member and/or the member's family. The assignment process must identify another person for recruiting school, while the empty job in the field remains unfilled that much longer, all of which costs money.

Several studies attempted to identify passive recruiter selection procedures that would identify people who were most likely to become successful recruiters before they were assigned to recruiting duty. Although some personal and background characteristics were determined to be statistically significant, little if any mention was made regarding the relative importance of these characteristics in recruiter selection. Budget cuts and increasing numbers of non-volunteer recruiters underscore the importance of passive selection procedures. Significant research questions remain unanswered. Of the characteristics believed to be related to successful recruiting, what's the most important? What's the next most important? Researchers who identified the need for passive, readily available measures of recruiter characteristics were on the right track. But how many prospective recruiters possess all the characteristics believed to be part of the

successful recruiter profile? If one person has some of these characteristics, and another person has others, how do we choose between them? The next chapter describes a methodology for making decisions about the relative importance of characteristics determined in past studies to be important in the successful recruiter's profile.

III. METHODOLOGY

The goal of this thesis is to identify personal characteristics associated with recruiter success. Insights from the study should yield management tools that would improve the process of selecting Army Reserve recruiters. One approach would conduct analysis of data from Army recruiters' personnel records and other data sources such as the Enlisted and Officer Master Files maintained by the services. Multivariate analysis such as logit or probit could be used to identify those individual characteristics associated with a successful recruiter. Some measure of the criterion, "recruiter success," would also need to be determined.

For several reasons, an alternate approach to multivariate analysis of existing data is needed. Army data on personal characteristics of recruiters do not exist. Other relevant data were not available. The "criterion problem," or lack of a measure that could be used to explain the variance in recruiter productivity based solely on individual recruiter differences, would have made traditional analysis difficult. Without data on individual recruiters, even the best criterion would not have been useful. Perhaps the strongest argument in favor of an alternate approach, however, is the failure of many previous

studies to identify through traditional analysis characteristics predictive of recruiter success.

A. MULTIATTRIBUTE UTILITY THEORY AND EXPERT SYSTEMS

The Army Recruiting Command uses a group process to select its AGR recruiters. Group members review applications and make decisions based on a set of published criteria. (This process was described more fully in the introduction.) Criteria are not ranked or weighted in order of importance. Following an interview, each group member makes a decision about an applicant independent of other group members as to the probability that an applicant would be a successful recruiter. The procedure is subjective and is based on the experience, knowledge, judgment and intuition of the selecting officials.

Some experts in the process of social decision making believe that decisions do, and should, depend on subjective quantities such as values and probabilities. Disagreements over policy decisions generally hinge on disagreements about values. Often, although those in conflict may agree about the relative dimensions of value, they disagree about the relative importance of various goals. Normally, such disagreements are fought out in the context of specific decisions, over and over again, at enormous social cost each time another decision must be made. [Ref. 25:p. 326]

Edwards suggested that organizational decisions should depend on some kind of social consensus, or aggregation of individual views, rather than on any single individual's views. Some aspects of value are matters of objective information, expertise, or both. [Ref. 25:p. 326]

Edwards proposed the use of multiattribute utility measurement as a solution to the problems encountered in this arena. The method can spell out explicitly the values of each group participant, show how and how much they differ and, in the process, reduce the extent of such differences. [Ref. 25:p. 327]

The Army Recruiting Command may be able to improve its selection process by applying Edwards' measurement technique. Its group process is affected by differing values among group members. By taking into account objective information regarding recruiter selection as well as relevant expertise among group members or other experts, the Army Recruiting Command could agree on a set of values for recruiter selection. By negotiating about, agreeing on, and (possibly) publicizing this set of values, recruiter selection could become more effective.

Edwards' technique is based on extensive use of simple rating procedures. Every decision may have value on a number of different dimensions. The idea behind multiattribute utility measurement is to discover those

values, one dimension at a time, and aggregate them across dimensions using a suitable aggregation rule and weighting procedure. Edwards' procedure for obtaining group consensus has ten steps. They are listed briefly below:

1. Identify the person(s) or organization(s) whose utilities are to be maximized.
2. Identify the issue(s) (decisions) to which the utilities needed are relevant.
3. Identify the entities to be evaluated. (For the Army Recruiting Command, these might be recruiter applicants.)
4. Identify the relevant dimensions of value for evaluation of the entities. (Specify a simple list of goals that seem important for the purpose at hand.)
5. Rank the dimensions in order of importance. (This can be done individually or in groups. An advantage of the group process is that arguments get on the table up front, and participants are more likely to start from a common information base.)
6. Rate dimensions in importance, preserving ratios. (How much more important is one dimension than another?)
7. Sum the importance weights, and divide each by the sum. This computation converts importance weights into numbers that, mathematically, are like probabilities.
8. Measure the location of each entity being evaluated on each dimension.

9. Calculate utilities for entities. The equation is $U_i = \sum_j w_j u_{ij}$, and $\sum_j w_j = I$. U_i is the aggregate utility for the ith entity. w_j is the normalized importance weight of the jth dimension of value, and u_{ij} is the rescaled position of the ith entity on the jth dimension. Thus w_j is the output of step 7, and u_{ij} is the output of step 8. The equation is the formula for a weighted average.

10. Decide by maximizing U_i. If a subset of i is to be chosen, then the subset for which $\sum_i U_i$ is maximum is best. [Ref. 25:pp. 328-329]

Several types of expert systems that incorporate multiattribute utility theory have been developed over the past few years to support decision making. The introduction of the personal computer and electronic spreadsheet programs are directly responsible for the rapidly growing popularity of these systems. One such system was selected to examine recruiter selection in this thesis. Before identifying criteria for selecting this system, however, it will be helpful to explain what expert systems are, how they are structured, and why they are useful.

In the late 1970s, expert systems were a conceptual breakthrough in the field of computer science known as Artificial Intelligence (AI). In the sixties, AI scientists had attempted to simulate "thinking" by finding general methods for solving broad classes of problems. In the

seventies the scientists used more specialized programs, concentrating on techniques such as representation (how to formulate the problem to make it easy to solve) and search (how to control the search for a solution while minimizing required time and computer capacity). When the scientists realized that "the problem-solving power of a program comes from the knowledge it possesses, not just from the formalisms and inference schemes it employs," they developed special programs that were expert in some narrow area, and this new field was born. [Ref. 26: p. 4]

Expert systems, also known as knowledge-based systems, apply AI reasoning and problem-solving techniques to knowledge about a specific problem to simulate the application of human expertise [Ref. 27:p. 16]. This allows the system to draw conclusions not programmed explicitly into the program. While traditional data processing techniques require <u>certain</u> input, use well-understood algorithms, and produce <u>correct</u> answers, expert systems use information that is not always consistent or complete, apply symbolic reasoning methods without following a numeric model, and produce satisfactory answers. Of course, the more knowledge the system has about a problem, the more effective the system is likely to be. [Ref. 27:p. 17]

Several players are involved in the process of building an expert system, or knowledge engineering, as depicted in Figure 3.1. The expert system is the computer software that solves the problem of interest. The domain or area expert is a person known for producing good solutions to the particular type of problem under study. The knowledge engineer is someone who knows how to build expert systems. The engineer's tasks include interviewing the experts, organizing the knowledge, and deciding how to represent it in the expert system. The expert-system-building tool is the programming language used by the knowledge engineer to build the system. The user is anyone who uses the expert system once it is developed. [Ref. 26:p. 9]

The heart of an expert system is its knowledge, or the information needed before the computer program can "behave intelligently." This knowledge is organized by facts and rules. Many rules in an expert system are called heuristics, or rules of thumb that limit the search for solutions. Expert systems use heuristics because the problems these systems try to solve are often difficult and poorly understood, and resist rigorous mathematical analysis or algorithmic solutions. (An algorithmic method provides the correct or optimal solution, while the heuristic method provides an acceptable one.) Heuristic rules make the search for solutions easier and more practical. [Ref. 26:p. 17]

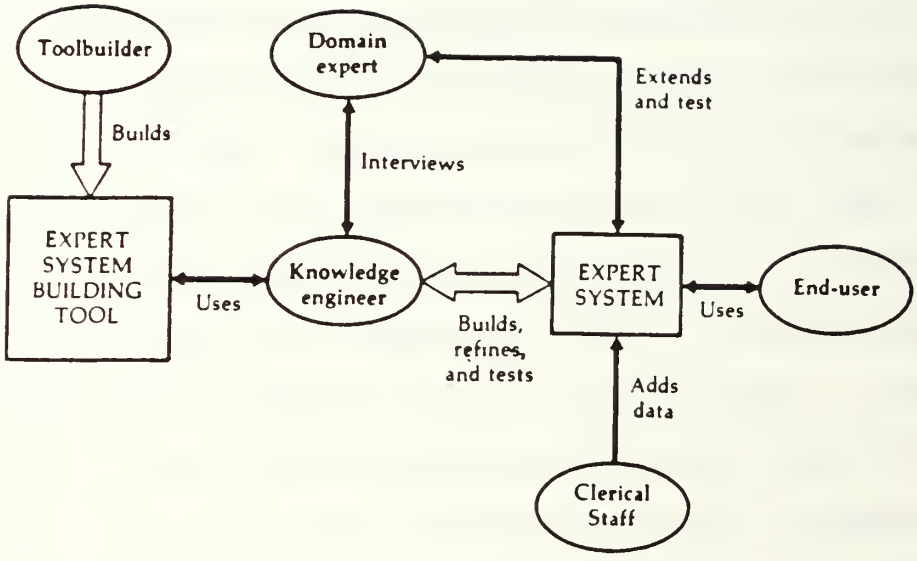

Figure 3.1. The Players in the Expert System Game. [Ref. 26:p. 8]

Knowledge representation, or structuring knowledge in a program, can be accomplished by using one or more standard techniques. Three techniques used most frequently in building expert systems are rules, semantic nets, and frames. [Ref. 26:p. 20] The rule-based technique uses IF (condition) and THEN (action) statements. If a problem matches the IF part of a rule, the THEN action is taken. This technique is the most popular in building expert systems. It provides a natural way to describe processes in a complex and rapidly changing environment, offers an opportunity to look at the problem one step at a time and react appropriately, and simplifies the job of explaining what the program did or how it reached a particular conclusion. [Ref. 26:p. 21] The rule technique is well-suited for representing deductive knowledge, such as cause and effect problems [Ref. 27:p. 18].

Both frame and semantic nets are frame-based representation methods. These methods use a network of nodes connected by relations and organized into a hierarchy. Each node represents a concept that can be described by attributes and values associated with the node. Frames are well-suited to represent descriptive and relational knowledge that clusters or conforms to stereotypes, and semantic nets are useful in modeling classifications or casual linkages. [Ref. 27:p. 18]

Expert systems have been used successfully to solve a wide variety of problems, particularly those requiring the sort of judgmental decisions people make every day. The most well-known expert system may be MYCIN, which can recommend treatments for suspected meningitis and other bacterial infections of the blood by analyzing a doctor's observations of a patient. [Ref. 27:p. 16]

An expert system may be a useful approach to a problem when:

- A solution has a high payoff: solutions are needed, and other methods have not worked
- The problem can be solved using an expert's knowledge rather than a particular algorithm
- Experts are available who can formalize the knowledge needed to solve the problem
- The problem does not necessarily have a unique answer,and
- The problem changes. [Ref. 27:p. 20]

The expert system selected to examine AGR recruiter selection is EXPERT87, a special type of expert system/decision aid based upon a concept its designer has labeled Quasi-Artificial Intelligence (QAI) [Ref. 28]. Before describing EXPERT87 further, though, an explanation of QAI and its advantages over traditional AI in the development of expert systems will be helpful.

Hoffman indicates that significant problems exist in traditional AI and expert systems that prevent them from being as useful as they might be. Some of these problems

concern the adequacy of the "cognitive engines" of AI systems in their ability to simulate correctly human reasoning processes. Other problems concern the completeness, generalizability, and validity of the production rules which are developed, as well as certain issues in mathematical statistics. Although solutions to these and other problems are being sought, Hoffman argues that needs exist for expert systems now, and that QAI, a less ambitious variant of AI, may be able to meet some of those needs. [Ref. 28:p. 3]

QAI builds upon a well-defined format for the problem space. Mathematically, a QAI problem space is hierarchical and geometric, as opposed to linguistic or symbolic, as in AI. QAI systems present the attributes of decision alternatives by means of (1) well-structured profiles of hypothetical case data, rather than by descriptive phrases, (2) queries requiring either binary or probablistic judgments, or (3) by means of hypotheticals which require the expert to invoke plausible propositions and rules. In QAI, experts' inferential processes are expressed as simple functional relationships rather than complex Boolian expressions that link large, unstructured sets of production rules. [Ref. 28:p. 3]

QAI is not intended for the breadth of problems AI systems hope to solve. It is not meant to be a reasoning or problem-solving tool in the formal sense and does not

attempt to extract higher levels of meaning from rules or propositions which are developed. Rather, QAI is intended for the large class of moderately difficult and repetitive decision problems which so often face managers and decision makers. QAI enables coherent and objective decisions to be made when no known criterion or dependent variable is available for the development of an empirical model. It enables efficient interaction of experts with a knowledge base, and a presentation of the process (and results) in a form which can be understood by the expert and/or by other prospective users of the system. [Ref. 28:p. 5]

EXPERT87 provides a format for gathering intuitive knowledge from experts in minimal time, and in a manner that would permit verifiable estimation of the trustworthiness of expert systems that emerge. The method is based on mathematical theory that allows the computer program to generate hierarchically ordered profiles of hypothetical alternatives. Hierarchical structuring of a problem's concepts avoids cognitive overload of experts, which assures a more beneficial utilization of attribute information. Attribute values for profiles the program generates are chosen to optimize the likelihood that the expert's resulting model correctly represents the expert's intuitive knowledge. [Ref. 28:p. 4]

Several important principles that underly the development of EXPERT87 follow [Ref. 29]:

1. Intuition is a component of thought processes. One of the basic principles of decision making is that people have sound, intuitive bases for acting on given problems, even though they can seldom express or describe their knowledge objectively. The intuitive knowledge they possess about a problem is made up of their observations about specific elements or attributes of a problem, which they seldom explicate when they make subjective judgments or evaluations.

2. Cognitive abilities are limited. In a well-known research article of the 1950's, "The Magic Number Seven, Plus or Minus Two," psychologist G. A. Miller wrote that humans cannot effectively deal with more than about seven concepts at one time. Miller demonstrated the validity of this principle, to within one or two categories, across a wide spectrum of human perceptual and cognitive activities. For this reason, EXPERT87 (and other similar software) limits problems to seven concepts with seven attributes per concept.

3. Cognitions are not easily communicated. People cannot communicate very clearly about their thought processes. They do not know what information is routinely ignored or discounted in their thinking. Nor do they often know how much importance they attach to each item of information, concept, or criterion when making decisions. When asked to assign weights to those factors which influence their decisions, they are often hesitant and sometimes unable to do so.

4. There is a mathematics of intuitive processes. The system is designed to overcome the difficulties described above and capture experts' intuitive knowledge without forcing them to think like mathematicians. The interactive process between expert and computer generates the functionality between attributes of alternatives and the overall merit of the alternatives. The mathematically derived functionality of the system makes it unique, an expert system which is not "rule-based" in the usual sense, but is function-based in the sense of being able to express in rather simple algebraic form the fundamental nature of the expert's intuitive processes. Now the system can respond to each new decision

problem using a functional model of expert intuition which accurately reflects only the consistent and reliable components of these intuitions.

5. Hierarchies express relations between concepts and attributes "Hierarchies are innate to the human way of thinking, of breaking reality in clusters and subclusters" [Ref. 30:p. 8-4]. According to L. L. Whyte, "The immense scope of hierarchical classification is clear. It is the most powerful method of classification used by the human brain-mind in ordering experience, observations, entities and information....The use of hierarchical ordering must be as old as human thought, conscious and unconscious." [Ref. 30:p. 8-4] In EXPERT87, hierarchies are tree structures carefully designed to define a problem in a comprehensive, meaningful, and well-organized way. Solutions are represented as alternatives, and the expert's task is to evaluate the alternatives. When the program evaluates an alternative, it uses the expert's own set of primary defining concepts and attributes.

6. Hypothetical constructs can be mapped into intervening variables. The difference between concepts and attributes is an important part of understanding EXPERT87. Attributes are specific, and people agree on their meaning. Concepts are general, and individuals impose their own unique meaning on concepts they use. Psychologists use the terms hypothetical construct and intervening variable to make clear the distinction between unquantified ideas and operationally defined measures. Figure 3.2 depicts an individual's construct (labeled "V") as a somewhat vague and incompletely specified set of ideas. The figure illustrates the explication of the construct, first by defining it in terms of measurable attributes, and then in the generation of an expert system, or a functional definition of the construct. It contains a process for mapping information from measurable attributes into a measure, here labeled an intervening variable. The measure, V, is an operational definition of the construct. Figure 3.3 illustrates the substitution of hypothetical constructs as concepts of a hierarchy. The linkage between attributes and constructs is missing, and EXPERT87 will construct this linkage after interacting with an expert and using its knowledge about the way the expert responds to problems.

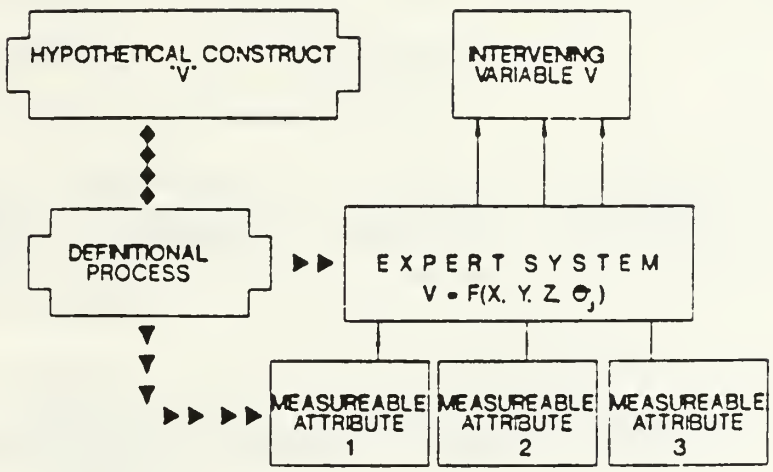

Figure 3.2 Transforming Concepts/Constructs into Variables. (Ref. 29)

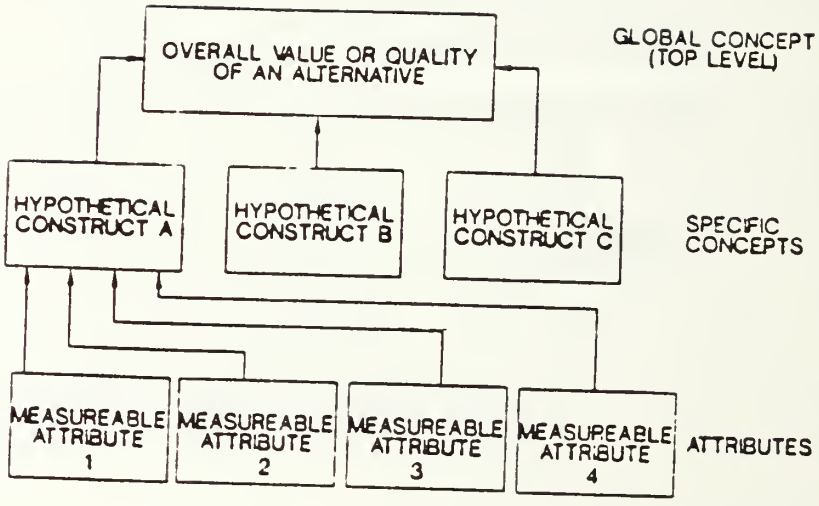

Figure 3.3 Defining Problems in Terms of Heirarchies. (Ref. 29)

7. Effective decision-aids develop understanding and confidence. Principles developed by cognitive psychologists have led to the ability to represent decision processes on a microcomputer, to make explicit the underlying (largely intuitive) knowledge and expertise of decision-makers, and to structure decision problems in hierarchical form. This can help users define their terms and concepts and clarify their thinking. It can also help them get a better understanding of the consistent and reliable components of their intuitive reactions to sets of information.

As in all commercially available expert systems software, EXPERT87 is proprietary, therefore detailed information about its algorithms and operations is limited.

To summarize, EXPERT87 was selected for this thesis because:

- the software is easy to use
- expert systems are developed easily and quickly, feedback is immediate, and results are easily understood
- the software can handle a wide variety of decision making problems, and
- the program's cognitive engine is deductive rather than inductive, which simulates human thinking and reasoning more accurately than expert systems developed with traditional AI.

B. THE MODEL

Alternative models of the recruiter selection process can be constructed. A particular problem can have more than one "correct" model. According to T. L. Saaty, "Individuals informed about a particular problem may structure it somewhat differently, but if their judgments are similar, their overall answers tend to be similar . . . the process

is robust" [Ref. 30:p. 8-4]. Saaty's work is the basis of Expert Choice, another decision support software package.

Figure 3.4 depicts the hierarchy developed to model the profile of a successful recruiter. The goal of the model, to "Identify Characteristics of the Successful Recruiter," is the node at the top of the hierarchy.

Based on the literature review and other information, characteristics believed to be related to recruiter success have been identified (see Table 6 in Chapter II). These characteristics are related, and can be organized into categories. Logical categories are Administrative Skills, Communications Skills, Background Characteristics, Personality Characteristics, and Specific Experience. These categories, or dimensions, become the largest branches, or nodes, of the hierarchy. The characteristics, or attributes, within each dimension become smaller branches, or nodes, of the hierarchy.

1. Administrative Skills

   - Planning

   - Organizing

   The Administrative Skills dimension covers aspects of the recruiter's job related to planning and organizing. Successful recruiters are well organized. They plan well, and use and follow their plans.

2. Communications Skills

   - Speaking Skills

   - Informing

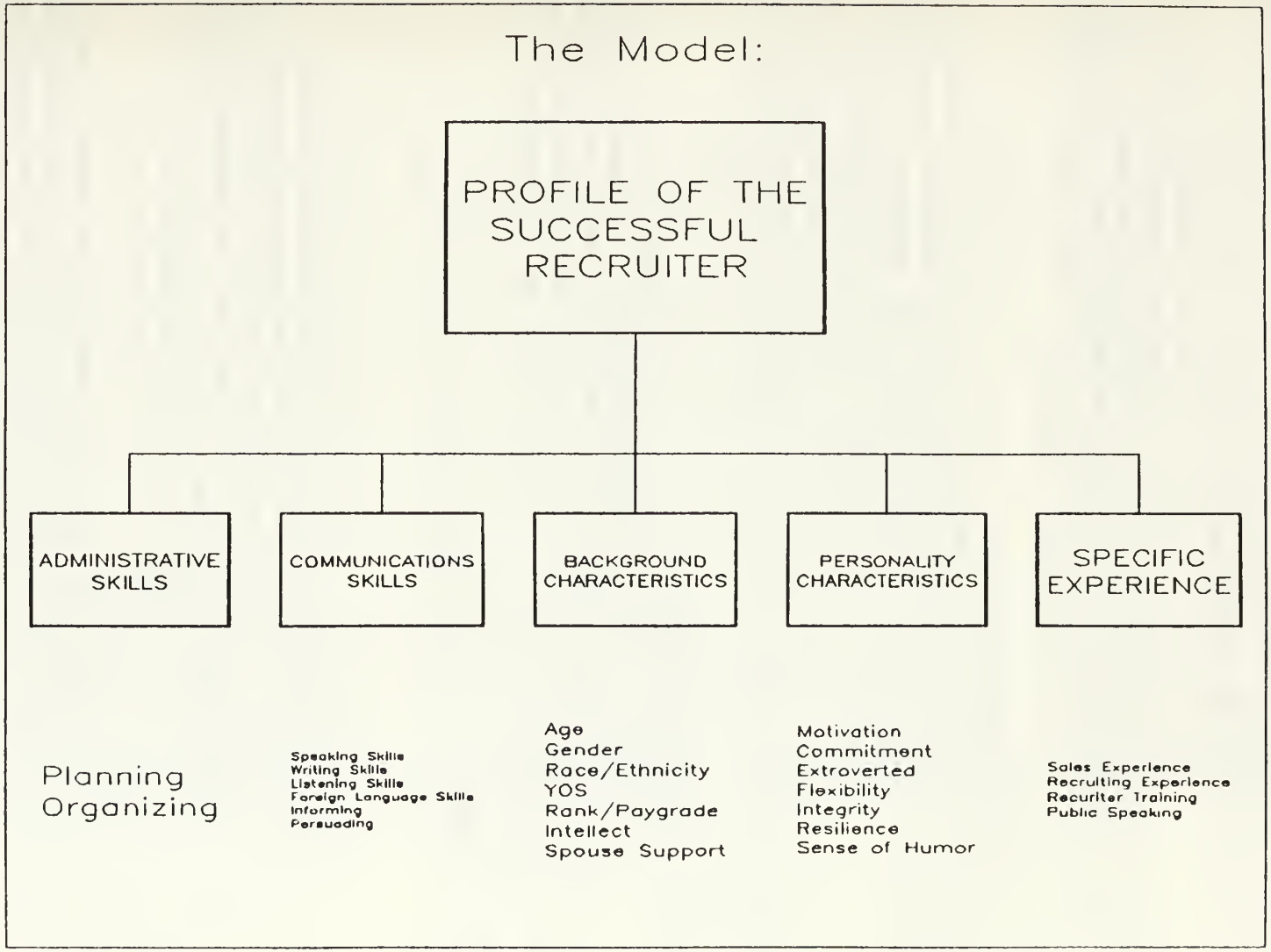

Figure 3.4 The Model: Profile of the Successful Recruiter.

- Persuading.
  Many communications skills are related to recruiter success. The literature suggests that speaking, informing, and persuading are important communications skills.

- Foreign Language Skills.
  The ability to speak a foreign language can be an important skill, particularly in markets where applicants' parents do not speak English. This skill can allow a recruiter to build trust with parents who often have a great deal of influence over their child's enlistment decision.

- Listening Skills.
  A former Navy recruiter who tested the model believes listening skills are the most important aspect of a recruiter's communication. By asking open-ended questions and listening carefully to what the potential applicant says, the successful recruiter can provide information targeted specifically at the needs and desires identified by the individual. The attribute, listening skills, was added to the Communications Skills dimension.

- Writing Skills.
  Because the recruiter's job involves very little writing, it is unlikely that strong writing skills are an important characteristic of the successful recruiter. But since writing is such a large part of communicating, writing skills were included in the model.

3. Background Characteristics

- Age

- Gender.
  The literature varies on the subject of which background characteristics are related to recruiter success. Regarding age and gender, one study found that older women and younger men were more successful than their counterparts [Ref. 4]. Other studies found that gender made no difference.

- Years of service.
  With respect to age and years of service, a recruiter must have experience in the service and/or be old enough to have some credibility. At the same time, the recruiter shouldn't be so old or senior that a tour in recruiting might be the last one before

retirement eligibilty. At such a time, many workers become less motivated than in the past, acquiring what servicemembers call a "short timer's attitude." In one study, the oldest recruiters were found to be among the least successful, and the authors concluded that this "twilight tour effect" may have been responsible [Ref 13].

- Race/Ethnicity.
  One study found that racial match, or being assigned to a market where prospects are people most like the recruiter, was related to recruiter success [Ref. 4].

- Intellect.
  Most of the literature suggests that intellect is directly and positively related to recruiter success -- the smarter the recruiter, the better. Education and ASVAB scores are often used as readily available measures of intellect.

- Spouse support.
  One aspect of recruiting that affects the probability that a recruiter will be successful is the issue of family support, particularly support of the spouse. Recruiting duty often means living away from the military community and services the family depends upon. Living away from military exchanges, commissaries, and medical facilities can create or increase financial hardship and stress for families. Recruiting often involves long hours and large amounts of time away from home. Most married (and formerly married) recruiters believe it takes a strong marriage and an especially supportive spouse to deal well with the added stresses brought on by recruiting duty.

4. Personality Characteristics
   Although these characteristics may be the most difficult to measure, both the literature and recruiters strongly suggest that this is the most important dimension. Some types of people will be successful recruiters, while others will not, and personality is key. The literature suggests that a large number of personality characteristics are related to recruiter success (see Table 6 in Chapter II). This list of characteristics is too long for this model (the software limits a dimension's attributes to seven for reasons explained earlier), so similar characteristics were combined, and the seven that seemed the most important were selected.

- Motivation.
  Drive, energy, ambition, desire to excel, and motivation were interpreted similarly by those who tested the model. Motivation was selected to describe these personality characteristics, which many believe is related to success in any endeavor, particularly recruiting.

- Extroverted.
  Someone who is extroverted and sociable, who enjoys working and talking with others, is thought more likely to succeed in recruiting than someone who is not.

- Flexibility

- Resilience.
  These are believed to be important characteristics due to the demanding and changeable nature of recruiting. How well a recruiter adjusts to changing situations, and how well the recruiter bounces back after repeatedly being turned down, are thought to be good indicators of a recruiter's ability to succeed over time.

- Sense of humor.
  This may help a recruiter enjoy the job, and life in general, and may help keep the recruiter on an even keel in a demanding job.

- Integrity

- Commitment.
  Many recruiters (and former recruiters) believe integrity and commitment to the organization are critical to recruiting success. All other things equal, those recruiters who care about finding good people/service matches, putting only the best people in their service, and doing the job with integrity were thought likely to be the most successful in the long run.

5. Specific experience
   Various types of experience are thought to be related to recruiter success.

- Recruiting experience.
  This type of experience may be the most relevant, particularly if the recruiter did well in the past.

- Sales experience.
  This may substitute for recruiting experience, as recruiters are often described as salespeople.

- Recruiter training.
  Many aspects of recruiter training are thought to be important to recruiting success, such as effective sales techniques, sales philosophy, etc.

- Public speaking experience may also be related to recruiter success.

For each of the five dimensions described above, EXPERT87 will generate a number of hypothetical profiles which each expert will evaluate. The software will generate a specially constructed set of attribute values for the attributes which define the dimension. (The program will generate a larger number of profiles for dimensions with larger numbers of attributes.) Profiles are presented in graphic form for the expert to examine, reflect on, and assess, as depicted in Figure 3.5. Experts use their own experience, knowledge, and intuition to evaluate the dimension.

After the last profile has been evaluated, the software completes its mathematical routines and stores functional relationships between attributes and dimensions. Now that the expert system is in place, it can evaluate real alternatives based on each expert's own expertise. One more profile is displayed evaluated based on the expert system just created. After the expert enters his/her assessment, the computer displays its findings. With reasonable care, the expert's response should be accurate to within five or six percent accuracy [Ref 29:p. 51].

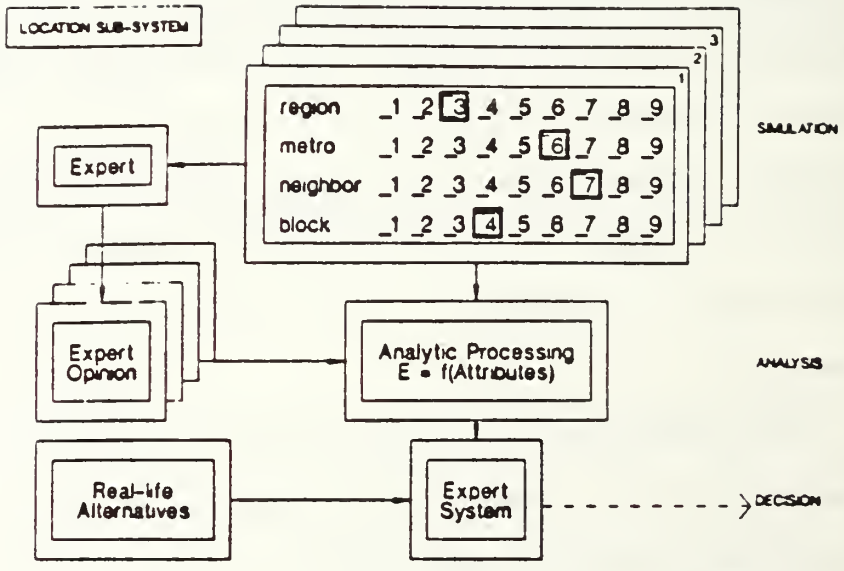

Figure 3.5 Hypothetical Profiles Presented in Graphic Form. (Ref. 29)

EXPERT87 contains a Fidelity Index which indicates how successful the program was in developing an expert system that correctly models the expert's own intuitions. If Fidelity is less than 70 percent, the expert's evaluations were probably inconsistent, which means that the intuitive or cognitive processes underlying the expert's assessments were not used in a consistent way [Ref 29:p. 53].

Relative weights are also calculated for each expert, indicating how important the attributes or dimensions are. The software also determines (for each expert) the shape of the function of each attribute, whether the relationship is positive or negative, monotonic or non-monotonic, convex, concave, or linear.

C. THE EXPERTS

Paul Johnson, a scientist who has studied the behavior of human experts for many years, describes what is meant by the term "expert":

> An expert is a person who, because of training and experience, is able to do things the rest of us cannot; experts are not only proficient but also smooth and efficient in the actions they take. Experts know a great many things and have tricks and caveats for applying what they know to problems and tasks; they are also good at plowing through irrelevant information in order to get at basic issues, and they are good at recognizing problems they face as instances of types with which they are familiar. Underlying the behavior of experts is the body of operative knowledge we have termed expertise. It is reasonable to suppose, therefore, that experts are the ones to ask when we wish to represent the expertise that makes their behavior possible. [Ref. 26:p. 5]

In the recruiter selection problem, obvious experts would be those who know best what it takes to succeed in recruiting: recruiters who are doing the job. Current experienced AGR recruiters were selected as experts to evaluate the model described above.

Others at various levels of the USAREC chain of command are also involved in the AGR recruiter selection process and could be considered experts. In addition to their responsibilities to recruit recruiters, endorse applications for recruiting positions, and serve on the boards used to select AGR recruiters, many of these people also have recruiting experience. Experts were sought from these various levels of the Army Recruiting organization to determine how or whether the profile of the successful recruiter changes from one person and/or organizational level to another.

For ease of data collection, experts were located within the San Francisco Army Recruiting Battalion, and Recruiting Stations within that battalion's Gilroy Company. Five experts participated in the project. Experts 1 and 2 are Gold Badge AGR recruiters (decorated for recruiting success). Expert 3 is a former AGR recruiter currently assigned to the San Francisco Recruiting Battalion. Expert 4 is a Station Manager and Regular Army recruiter. Expert 5 is a former AGR recruiter currently assigned to USAREC Headquarters.

D. COMPARISON/CONTRAST OF EXPERTS

The next chapter will analyze the similarities and differences of the expert systems created by each of the five experts. Trends and relative weights among dimensions and attributes will be examined to determine whether a consistent, clearly identifiable profile of a successful recruiter emerges. The five expert systems will also be examined to determine whether they vary in any systematic way across levels of the Army Recruiting organization.

The analysis will also include an evaluation of hypothetical recruiter applicants. Not only will this provide an opportunity to compare five different experts' ratings of the same applicants, it will also be possible to determine how and why each expert system rated the applicants as it did.

IV. ANALYSIS AND RESULTS

A. THE EXPERTS

The expert system developed for each of the five recruiting experts will be evaluated and compared in terms of three concepts: Fidelity, Standards, and Discriminability. The indices for each of these concepts, which range from 0 to 100, can be used to interpret the worth of an expert system. It is important to distinguish between evaluating the worth of an expert system and determining whether the individuals generating the expert systems were, in fact, "experts." For example, high Fidelity means only that the expert was consistent in evaluating alternatives. The indices cannot determine the amount of knowledge an individual possesses about a particular subject.

The Fidelity Index measures how well the expert system correctly reproduces the intuitive judgments of the expert. If the Fidelity Index is 100, the expert system models the expert's judgments perfectly. A Fidelity Index of less than 70 indicates that the expert's evaluations were not consistent, and 40 means they were very inconsistent. The software calculates Fidelity Indices for all levels of the hierarchical model.

After an expert enters assessments of the model's hypothetical profiles, the software generates an expert system. Once created, the program uses the expert system to predict assessments for the same profiles the expert reviewed. Any difference between an expert's actual assessment of a profile and the expert system's predicted value is called error. The software calculates for each expert the Mean Squared Error within each dimension and for the overall model. If the Fidelity Index is high, errors for individual assessments and the overall Mean Squared Error should be small.

The Standards Index measures the extent to which the experts maintain high standards on their assessments of hypothetical profiles of recruiters as opposed to being lenient or generous. For this measure, an Index of 80 indicates that the expert has high or exacting standards, and 20 indicates leniency.

The Discrimination Index is a measure of the expert's ability to make fine distinctions among hypothetical profiles of recruiters. An Index of 80 indicates that the expert is highly discerning, and 20 indicates inaccuracy or inability to distinguish among profiles. As with the Fidelity and Standards Indices, the software calculates Discrimination Indices for each dimension as well as the overall model.

Appendix A displays, for each of the five expert systems, the Indices mentioned above as well as the Mean Squared Error and the explained variance in each dimension and the overall model.

For all five expert systems, the overall model Fidelity Index was above 90, and was at least 90 for most of the individual dimensions as well. Results for Experts 1 and 4 include Fidelity Indices in the high 80s on the Background Characteristics dimension. Expert 1's results also include a Fidelity Index in the high 80s on the Personality Characteristics dimension. (Note: These two dimensions contain the largest number of attributes the software permits, and several experts expressed the difficulty they encountered in making assessments.)

For the overall model, the experts' Standards Indices ranged from 25 to 79. The two AGR recruiters were the most lenient, and the Recruiting Station Commander had the highest Standards Index. Although the Standards Indices varied across dimensions for all experts, those experts whose Standards Indices were low for the overall model tended to have lower Indices than the other experts for the individual dimensions as well.

The experts' Discrimination Indices ranged from 62 to 94 for the overall model. Expert 3, a former AGR recruiter, had the highest Discrimination Index. Expert 2, currently an AGR recruiter, had the lowest, which was still above what the software documentation calls the "normal range."

B. DIMENSIONS

Table 7 is an aggregation of relative weights assigned to the model's five dimensions by each of the five experts. The weights for each column will sum to (approximately) one. One interpretation of these weights for Expert 1 is that Communications Skills dimension, with a relative weight of .37, is approximately four times as important as the Administrative Skills dimension, which has a relative weight of .093. Specific Experience (.255) is approximately five times as important as Background Characteristics (.058) in a successful recruiter. (Appendix B contains more detailed data displays for each expert.)

Table 8 lists the five expert systems' most, second most, and least important dimensions as well as their relative weights. Personality Characteristics, Communication Skills, and Specific Experience were judged the most important dimensions. Background Characteristics were relatively less important for the five experts. Administrative Skills were judged least important by three of the five experts.

C. ATTRIBUTES

This section discusses attributes the experts judged most important within the dimensions mentioned earlier. Again, further explicit detail for all attributes and dimensions of the five expert systems is contained in

TABLE 7

Relative Weights of Dimensions

Dimension / Expert	1	2	3	4	5
Administrative Skills	.093	.065	.1241	.073	.086
Communication Skills	.37	.208	.1303	.386	.244
Background Characteristics	.058	.18	.1701	.078	.199
Personality Characteristics	.224	.211	.4021	.269	.407
Specific Experience	.255	.336	.1734	.194	.064

TABLE 8

Most/Least Important Dimensions

DIMENSION/ EXPERT	1	2	3	4	5
MOST IMPORTANT	Communication Skills .37	Specific Experience .336	Personality Characteristics .402	Communication Skills .386	Personality Characteristics .407
SECOND MOST IMPORTANT	Specific Experience .255	Personality Characteristics .211	Specific Experience .173	Personality Characteristics .269	Communication Skills .244
LEAST IMPORTANT	Background Characteristics .058	Administrative Skills .065	Administrative Skills .124	Administrative Skills .073	Specific Experience .064

Appendix B, and each expert's relative weights for attributes within a dimension will sum to (approximately) one.

1. Personality Characteristics

Table 9 examines the judgments the experts made about the attributes of the Personality Characteristics dimension. Three of five experts judged Motivation most important, while the other two experts said Integrity was the most important personality attribute. In three of five cases, Motivation and/or Integrity were judged nearly three times as important as the next closest attribute in this dimension. Commitment, Flexibility, and Sense of Humor received a variety of judgments. Two experts judged Resilience as the least important attribute in this dimension.

2. Communications Skills

As described in Table 10, the experts consistently identified Listening and Informing as the most important attributes within the Communication Skills dimension. In one case (Expert 4), Listening was nearly six times as important as Writing, which was judged least important. Persuading and Speaking Skills received a variety of ratings, while Writing Skills and Foreign Language Skills were judged least important.

TABLE 9

Personality Characteristics Dimension
Most/Least Important Attributes of Personality Characteristics Dimension

ATTRIBUTE	EXPERT #1	#2	#3	#4	#5
MOST IMPORTANT	Integrity .44	Motivation .296	Integrity .229	Motivation .41	Motivation .282
LEAST IMPORTANT	Extroverted 0	Resilience .038	Commitment .069	Sense of Humor .052	Resilience .03

TABLE 10

Most/Least Important Attributes of Communications Skills Dimension

ATTRIBUTE	EXPERT #1	#2	#3	#4	#5
MOST IMPORTANT	Informing .228	Informing .342	Listening .224	Listening .331	Listening .279
LEAST IMPORTANT	Writing .078	Foreign Language .09	Foreign Language .105	Foreign Language .039	Foreign Language .083

TABLE 11

Most/Least Important Attributes of Specific Experience Dimension

ATTRIBUTE/ EXPERT	1	2	3	4	5
MOST IMPORTANT	Recruiting Experience .381	Sales Experience .325	Recruiting Experience .523	Recruiter Training .371	Sales Experience .344
SECOND MOST IMPORTANT	Sales Experience .31	Recruiting Experience .28	Recruiter Training .341	Recruiting Experience .273	Recruiting Experience .332
LEAST IMPORTANT	Public Speaking Experience .129	Recruiter Training .17	Sales Experience .047	Public Speaking Experience .158	Public Speaking Experience .152

3. Specific Experience

Among the attributes within the Specific Experience dimension, Recruiting Experience was most important and Public Speaking Experience was least important. For those experts who believed that sales experience was a substitute for recruiting experience (two of three of these experts are AGR recruiters), the two attributes were judged very important, and the relative weights for these attributes were similar. The two people whose expert systems distinguished between sales and recruiting experience judged Recruiting Experience and Recruiter Training as the most important attributes in this dimension. Table 11 summarizes these judgments.

4. Background Characteristics

Although the Background Characteristics dimension received a variety of ratings across experts and generally was rated less important than other dimensions, the relative ranking of attributes within this dimension showed substantial consistency. Four of five experts judged Intellect as the single most important attribute in this dimension by a noticeable margin. Spouse Support was judged very to moderately important. Gender, Age, Years of Service, and Rank/Paygrade received a variety of ratings, but in most cases, these attributes were significantly less important than other attributes.

The five experts were asked to interpret the Race/Ethnicity attribute as a "racial match" issue. In other words, compared to the other attributes in the Background Characteristics dimension, experts were asked how important it is for a recruiter to be the same race or have the same ethnic background as the people in the recruiter's market. This attribute had the largest spread of relative weights of the seven in this dimension. One expert judged Race/Ethnicity to be slightly more important than Intellect but less important than Spouse Support. Another expert believed Intellect was 40 times more important than Race/Ethnicity. Three experts ranked the attribute second, one expert placed it in the middle of seven attributes, and one person's expert system assigned it a relative weight of nearly zero.

5. Administrative Skills

Three of five experts believed Administrative Skills was the least important dimension in the model. The other two experts ranked this fourth of five dimensions, but for four of the five experts, large gaps existed between the relative weights assigned Administrative Skills and the next most important dimension. Within this dimension, experts believed both Planning and Organizing are important attributes. Although the Administrative Skills dimension was less important relative to others in the model, planning and organizing abilities were important, and one skill did not substitute for the other.

D. COMPARING THE EXPERT SYSTEMS

This phase of the analysis used the five expert systems described above to evaluate a set of five hypothetical recruiter applicants. Admittedly, ratings on many attributes in the model would not be obtainable from existing data, nor could they be measured objectively. To obtain ratings on some of these attributes, subjective assessments would have to be made. For purposes of the analysis, however, an assumption was made that ratings on all attributes in the model (1) were measurable and (2) were agreed upon by the five experts whose systems were used to evaluate the "applicants." That is, all of the experts assessed the same applicant as possessing the same objective profile of attributes. The experts differ (if they do) in their relative evaluations of the attributes that contribute to being a successful recruiter.

Five hypothetical recruiter applicants were created for evaluation. Their profiles are contained in Table 12. By design, two applicants lie at opposite ends of the rating scale (1-9) on all attributes. The high-ranked applicant should end up as every expert's first choice, and the low-ranked applicant should be a unanimously poor or unacceptable choice for all experts. These extreme cases will illustrate how judgments are affected by the Standards Index. Experts whose standards are high tend to assign lower ratings than more lenient experts. Recall that

TABLE 12

Attribute Ratings of Five Hypothetical Recruiter Applicants

Attribute/ Applicant	A	B	C	D	E
Planning	3	5	5	5	9
Organizing	3	5	5	5	9
Speaking	3	8	5	5	9
Writing	3	8	5	5	9
Listening	3	8	5	5	9
Foreign Language	3	8	5	5	9
Informing	3	8	5	5	9
Persuading	3	8	5	5	9
Age	3	5	5	5	9
Gender	3	5	5	5	9
Race/ Ethnicity	3	5	5	5	9
Years of Service	3	5	5	5	9
Rank/ Paygrade	3	5	5	5	9
Intellect	3	5	5	5	9
Spouse Support	3	5	5	5	9

TABLE 12

Attribute Ratings of Five Hypothetical Recruiter Applicants
(Continued)

Attribute/ Applicant	A	B	C	D	E
Motivation	3	5	8	5	
Commitment	3	5	8	5	9
Extroverted	3	5	8	5	9
Flexibility	3	5	8	5	9
Integrity	3	5	8	5	9
Resilience	3	5	8	5	9
Sense of Humor	3	5	8	5	9
Sales Experience	3	5	5	8	9
Recruiting Experience	3	5	5	8	9
Recruiter Training	3	5	5	8	9
Public Speaking Experience	3	5	5	8	9

Appendix A contains data on the Standards, Fidelity, and Discrimination Indices for the five expert systems.

The other three recruiter applicants also have specially constructed sets of attributes. All three have arbitrary ratings of five (4.5 is the minimally acceptable rating on the scale used by the software) on all attributes except those within one of the three dimensions identified earlier as the most important according to one or more of the five experts (Personality Characteristics, Communication Skills, and Specific Experience). On these attributes, an applicant will have ratings of eight. This will provide an opportunity to review the judgments each expert system makes and analyze the similarities and differences among them.

As expected, all five expert systems selected Applicant E by an overwhelming margin. As shown in Table 13, on a scale of 1-100, overall profile scores range from 86.4 to 99, which places Applicant E in the Superior range of all five expert systems. This is no surprise, as this applicant's profile was specially designed to result in unanimous selection. The results show that the expert systems created by those experts with the highest standards, Experts 3 and 4, generally rated applicants lower than experts with more lenient standards.

As expected, all five expert systems rejected Applicant A. However, if 45 had been the cut-off for minimal acceptability, as it is in EXPERT87, Expert 1's rating of 42

TABLE 13

Expert Systems Evaluate Hypothetical Applicants

CHOICE/ EXPERT	1	2	3	4	5
First	E 99	E 99	E 99	E 86.4	E 97.7
Second	B 91.4	D 75.7	D 56.7	D 58.4	C 59.9
Third	C 82.3	C 67.4	C 56	B 53.4	B 58.7
Fourth	D 76	B 61.4	B 49.4	C 50.7	D 46.9
Fifth	A 42	A 38.5	A -32.5	A 16.9	A 28.5

would have come close to the cut-off, even though Applicant A was rated Below Standard (ratings of three) on all attributes. Another look at the Standards Indices (Appendix A) reveals that Expert 1 has the lowest Standards Index (is the most lenient) of the five experts on the Overall Profile. Had the ratings been slightly higher (ratings of four on all attributes, for example), this expert system (and possibly others) may well have found Applicant A acceptable, even though all individual attributes would still have been below the acceptable cut-off.

The most interesting results are for Applicants B, C, and five expert systems made. (Detailed evaluations are contained in Appendix C.) Only two of the five experts agreed on the order in which they would select these "applicants" to be recruiters.

A closer look at Table 13 and Appendix C provides some interesting insight into the selection problem. Based on their expert systems, Experts 2, 3, and 4 ranked Applicant D second. Expert 2's rating made Applicant D a superior choice, yet ratings by Experts 3 and 4 were below 60, and Expert 5 regarded Applicant D as minimally acceptable.

Expert 1 ranked Applicant B second with an overall evaluation of 91.4--clearly superior. Yet, two other experts rated the same applicant below 60, and Expert 3 found Applicant B nearly minimally acceptable.

Although Expert 5 ranked Applicant C second, there was nearly a 40-point gap between Applicants E and C. The effects of the Standards Index came into play again here. Three experts ranked Applicant C third, but the evaluations ranged from 56 to 82.3. Expert 1's lenient standards result in her fourth place choice being rated above all other experts' second place choices.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

1. Past Research

The goals of this thesis were to identify attributes associated with successful recruiters, develop and analyze a model to identify which attributes make the most valuable contributions to successful performance as a recruiter, and critique the applicability of existing data for this type of analysis.

An extensive literature review identified many previous studies that examined the recruiter selection problem. Two distinct types of factors have been examined for their utility in predicting whether or not an individual would be a successful recruiter. One class of factors includes those for which information can be found in standard military personnel files. Many studies used traditional analytical methods such as regression analysis to determine whether recruiter productivity could be predicted by various combinations of factors. If these factors could be identified, they could be used to select for recruiting duty those individuals with the highest probability of success. The most frequently used personnel file type variables were age, gender, rank, education, entrance test scores, etc.

The other class of factors are given by specific tests to measure various personality characteristics. Past studies show that many researchers understood, at least intuitively, that successful recruiters possess some common personality characteristics. A wide variety of test batteries have been developed and used with varying amounts of success.

Using either set of factors, the results were generally disappointing. Recruiter characteristics found to be significant varied across studies, and no one reliable set of predictive characteristics emerged from such data. When significant variables were identified, results either could not be duplicated upon cross-validation or were not cross-validated at all. Personnel data did not seem to contain information on the appropriate factors. Personality test factors often suffered from the presence of the criterion problem in the modeling efforts.

The criterion problem, or measuring recruiter performance in a reliable and valid manner, was probably the single most important reason why past research explained relatively little variance in recruiter productivity. Researchers used various measures of performance as their dependent variable, such as supervisory ratings, school performance, percent of quota achieved, and total number of enlistments, only to find that each measure suffered from its own set of weaknesses. For example, although recruiter

production figures were easy to obtain and use, the measure was contaminated by market factors not related to individual recruiter productivity. Researchers have worked on this problem with some success, but more work is needed.

The vast majority of military recruiters are not volunteers. Therefore, some researchers have argued that passive devices are needed to select individuals who are most likely to become successful recruiters. They advocate a shift away from "fakable" devices such as personality tests and favor the use of readily available biographical and background information. Recent work identified several characteristics that were related to recruiter productivity, but the results were not cross-validated.

Relatively recent efforts by Borman and others have led to the development of a Special Assignment Battery designed especially for recruiter selection. The Battery predicted Navy recruiter performance fairly well and achieved similar success in a recent revalidation effort using Marine Corps recruiters. This approach appears to have significant promise. Its only apparent drawback are the costs its implementation would involve.

2. Expert Systems

This thesis applied a "new" methodology to the recruiter selection problem. Referred to as Expert Systems, a field within the science of Artificial Intelligence (AI), this methodology has been used successfully to solve a wide

variety of problems, particularly those that require the types of judgmental decisions people make every day. Expert Systems use one or more experts' knowledge, judgments, experience, and intuition to solve problems.

Expert System software called EXPERT87 was selected for this thesis. The program is based on a concept called QuasiArtificial Intelligence (QAI), which successfully avoids some of the problems encountered in traditional AI applications. QAI is intended for the many types of moderately difficult and repetitive decisions managers and decision makers face. The method enables users to make coherent and objective decisions even when no known criterion or dependent variable is available for the development of an empirical model.

3. Profile of the Successful Recruiter

The model developed for this thesis was based on those characteristics that previous studies had found to be related to recruiter success. These characteristics were arranged in a hierarchical structure. Attributes, or specific characteristics, were organized into larger dimensions, or branches, of the hierarchy.

Five Army Recruiting experts evaluated the model, and EXPERT87 created their expert systems. A surprisingly consistent successful recruiter profile emerged. While the five expert systems differed in their relative weightings of attributes and dimensions, there was general agreement about

which characteristics were more important than others. Of the model's five dimensions, Personality Characteristics, Communications Skills, and Specific Experience were judged most important in a successful recruiter. Within those dimensions, the most important attributes were Integrity, Motivation, Listening, Informing, Sales Experience, Recruiting Experience, and Recruiter Training.

B. RECOMMENDATIONS

1. Measure the Important Attributes

These results may have important implications for future work in recruiter selection. Some researchers believe that improved formatting of the problem, better analytical techniques, and a more reliable dependent variable will improve the ability of traditional personnel data file variables (e.g., age, gender, rank, education, etc.) to predict recruiter performance. Yet, the results of this thesis found that these traditional variables contribute comparatively little to what the experts judged important in a successful recruiter. Characteristics that are usually not present in personnel data files appear to be much more important. Rather than investing much more time and effort using personnel file data to predict performance simply because the data exist, it may be more to the point to concentrate on finding ways to measure the attributes the experts judged to be relatively more important.

2. Use Expert Systems

Expert Systems can be applied to this problem and improve the quality of recruiter selection decisions. Significant numbers of experts exist who know what is required to be a successful recruiter. These individuals may or may not be consciously aware of the knowledge, experience, judgments, and intuition they possess that could be directed toward solutions. As is the case for most problems in the real world, there is no one right answer. The profile of the successful recruiter probably varies in many ways. While one set of attributes may be ideal for one particular market or environment, the same profile could lead to miserable results elsewhere. At the same time, some attributes may be universally important. Elicitation procedures such as Expert Systems can help recruiting managers decide which models fit best where, and why.

3. Improve the Model

The model used in this thesis was a first attempt at representing knowledge about the recruiter selection problem in hierarchical form. The experts who participated in this project made many valuable suggestions for improvement. Specifically, adding two more dimensions, attributes that describe those dimensions, and separating the personality dimension may provide a model yielding even better insights to the relative importance of attributes for selecting successful recruiters.

Such a revised model might look something like the one pictured in Figure 5.1. The changes to the model in chapter two include:

- Two new dimensions have been created, Sociological Characteristics and Military Background.
- Two attributes, Time Management and Attention to Detail, have been added to the Administrative Skills dimension.
- Attributes that describe behavior (What I do) have been separated from those that describe the ego (Who I am). This results in the replacement of the Personality Characteristics dimension with two new dimensions called Behavior and Ego. New attributes, Self-image and Self-starter, have been added.
- Attributes within the Background Characteristics dimension have been separated.

Other improvements of the model could also be investigated. For example, military experience could be separated into Years of Active Duty and Years of Reserve Duty. One type of prior military experience may be more important than another, and it may be important to have relative weights for both types of experience. Geographic preference and military occupation may also be factors that are valuable in identifying potentially successful recruiters.

4. Work Remaining

Many possible applications exist for this type of analysis and methodology. Expert Systems could be compared and contrasted across services to determine whether there are significant interservice differences in perceptions and knowledge of what characteristics are necessary for a

successful recruiter. As mentioned earlier, Expert Systems may be needed for different markets or recruiting environments within the U. S. Army Reserve. It may also be useful to develop Expert Systems for the Regular Army's recruiter selection problem. This may be particularly useful in light of the fact that such a high percentage of Regular Army recruiters (about 80 percent) are non-volunteers.

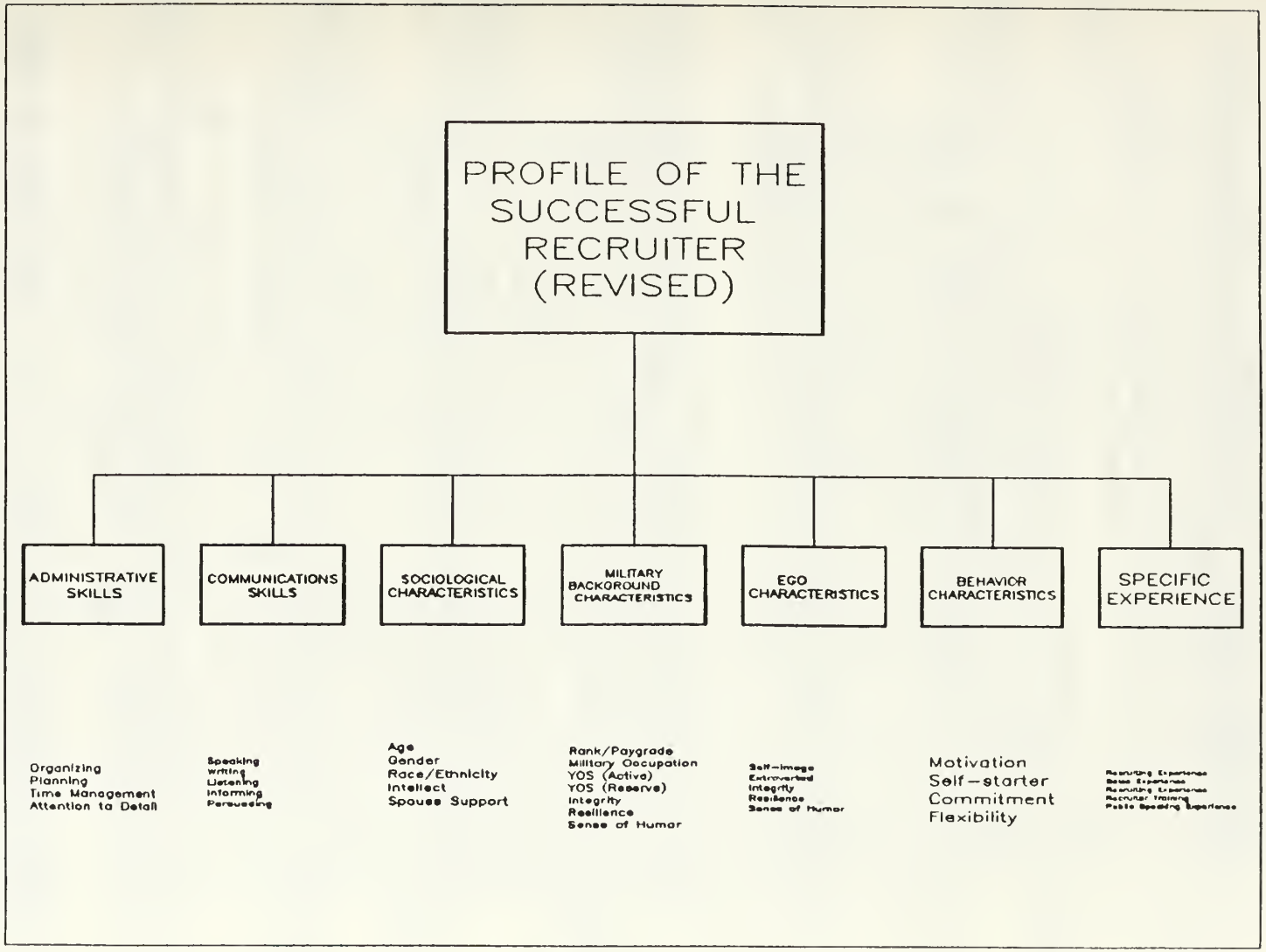

Figure 5.1 Profile of the Successful Recruiter: A Revised Model

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APPENDIX A

THE EXPERT SYSTEMS: INDICES, VARIANCE, AND MEAN SQUARED ERROR

EXPERT #1	Fidelity Index	Standards Index	Discrimination Index	Variance Explained	Mean Squared Error
OVERALL PROFILE	94.4	25.1	84.4	89.24	6.92
ADMINISTRATIVE SKILLS	97.7	44.4	83.9	95.51	4.44
COMMUNICATION SKILLS	95.4	41.6	65.5	91.03	4.9
BACKGROUND CHARACTERISTICS	89.4	27.0	48.8	79.97	5.46
PERSONALITY CHARACTERISTICS	88.4	38.3	66.5	78.3	7.75
SPECIFIC EXPERIENCE	93.2	40.6	55.5	87.03	4.99

EXPERT #2	Fidelity Index	Standards Index	Discrimination Index	Variance Explained	Mean Squared Error
OVERALL PROFILE	92.6	35.9	62.1	85.86	5.84
ADMINISTRATIVE SKILLS	97.5	36.4	46.7	95.06	2.59
COMMUNICATION SKILLS	90.9	35.9	58.5	82.76	6.07
BACKGROUND CHARACTERISTICS	96.1	28.2	55.0	92.41	3.79
PERSONALITY CHARACTERISTICS	93.8	44.7	63.6	88.14	5.48
SPECIFIC EXPERIENCE	96.8	36.9	44.1	93.81	2.74

EXPERT #3	Fidelity Index	Standards Index	Discrimination Index	Variance Explained	Mean Squared Error
OVERALL PROFILE	93.1	79.0	94.1	86.78	8.56
ADMINISTRATIVE SKILLS	92.3	53.6	113.5	85.26	10.9
COMMUNICATION SKILLS	91.5	74.6	90.4	83.73	9.11
BACKGROUND CHARACTERISTICS	92.7	44.7	94.2	86.0	8.82
PERSONALITY CHARACTERISTICS	92.4	77.1	95.4	85.43	9.11
SPECIFIC EXPERIENCE	96.7	35.9	68.1	93.57	4.32

EXPERT #4	Fidelity Index	Standards Index	Discrimination Index	Variance Explained	Mean Squared Error
OVERALL PROFILE	96.0	61.5	76.5	92.17	5.35
ADMINISTRATIVE SKILLS	95.3	45.8	84.9	90.95	6.38
COMMUNICATION SKILLS	94.2	51.7	71.7	88.75	6.01
BACKGROUND CHARACTERISTICS	87.6	49.3	56.3	76.91	6.76
PERSONALITY CHARACTERISTICS	95.6	56.9	64.2	91.44	4.69
SPECIFIC EXPERIENCE	94.3	44.3	72.0	88.99	5.97

EXPERT #5	Fidelity Index	Standards Index	Discrimination Index	Variance Explained	Mean Squared Error
OVERALL PROFILE	91.2	46.3	69.4	83.33	7.08
ADMINISTRATIVE SKILLS	94.9	54.2	77.7	90.20	6.09
COMMUNICATION SKILLS	91.4	64.3	72.8	83.61	7.37
BACKGROUND CHARACTERISTICS	91.0	54.5	40.8	82.87	4.22
PERSONALITY CHARACTERISTICS	90.9	49.1	51.4	82.71	5.35
SPECIFIC EXPERIENCE	94.6	34.4	47.2	89.61	3.8

APPENDIX B

PROFILE OF THE SUCCESSFUL RECRUITER

EXPERT #1

ADMINISTRATIVE SKILLS	COMMUNICATIONS SKILLS	BACKGROUND CHARACTERISTICS	PERSONALITY CHARACTERISTICS	SPECIFIC EXPERIENCE
9.31	36.97	5.82	22.41	25.49
Planning 74.52	Speaking 14.38	Age 7.73	Motivation 14.02	Sales Experience 30.96
Organizing 25.48	Writing 7.83	Gender 12.07	Commitment 4.70	Recruiting Experience 38.07
	Listening 20.85	Race/ Ethnicity 18.69	Extroverted 0	Recruiter Training 18.11
	Foreign Language 18.13	Years of Service 10.92	Flexibility 14.43	Public Speaking Experience 12.86
	Informing 22.81	Rank/ Paygrade 8.95	Integrity 43.96	
	Persuading 16.00	Intellect 16.22	Resilience 9.51	
		Spouse Support 25.42	Sense of Humor 13.39	

PROFILE OF THE SUCCESSFUL RECRUITER

EXPERT #2

ADMINISTRATIVE SKILLS	COMMUNICATIONS SKILLS	BACKGROUND CHARACTERISTICS	PERSONALITY CHARACTERISTICS	SPECIFIC EXPERIENCE
6.50	20.78	17.97	21.14	33.61
Planning 49.47	Speaking 10.76	Age 10.73	Motivation 29.55	Sales Experience 32.51
Organizing 50.53	Writing 11.50	Gender 4.48	Commitment 6.80	Recruiting Experience 27.99
	Listening 24.18	Race/ Ethnicity 0.47	Extroverted 11.07	Recruiter Training 16.97
	Foreign Language 8.97	Years of Service 7.78	Flexibility 10.84	Public Speaking Experience 22.53
	Informing 34.18	Rank/ Paygrade 10.29	Integrity 27.81	
	Persuading 10.41	Intellect 40.17	Resilience 3.77	
		Spouse Support 26.07	Sense of Humor 10.16	

PROFILE OF THE SUCCESSFUL RECRUITER

EXPERT #3

ADMINISTRATIVE SKILLS	COMMUNICATIONS SKILLS	BACKGROUND CHARACTERISTICS	PERSONALITY CHARACTERISTICS	SPECIFIC EXPERIENCE
12.41	13.03	17.01	40.21	17.34
Planning 59.94	Speaking 12.38	Age 9.49	Motivation 12.79	Sales Experience 4.73
Organizing 40.06	Writing 17.9	Gender 3.86	Commitment 6.94	Recruiting Experience 52.32
	Listening 22.39	Race/ Ethnicity 11.73	Extroverted 11.02	Recruiter Training 34.08
	Foreign Language 10.47	Years of Service 11.44	Flexibility 18.99	Public Speaking Experience 8.87
	Informing 18.46	Rank/ Paygrade 16.02	Integrity 22.91	
	Persuading 18.4	Intellect 33.89	Resilience 12.03	
		Spouse Support 13.58	Sense of Humor 15.32	

PROFILE OF THE SUCCESSFUL RECRUITER

EXPERT #4

ADMINISTRATIVE SKILLS	COMMUNICATIONS SKILLS	BACKGROUND CHARACTERISTICS	PERSONALITY CHARACTERISTICS	SPECIFIC EXPERIENCE
7.32	38.62	7.82	26.88	19.36
Planning 40.18	Speaking 19.59	Age 9.29	Motivation 40.95	Sales Experience 19.86
Organizing 59.82	Writing 5.85	Gender 10.92	Commitment 15.33	Recruiting Experience 27.28
	Listening 33.10	Race/ Ethnicity 20.58	Extroverted 11.16	Recruiter Training 37.06
	Foreign Language 3.94	Years of Service 6.09	Flexibility 5.96	Public Speaking Experience 15.80
	Informing 21.37	Rank/ Paygrade 8.01	Integrity 12.18	
	Persuading 16.16	Intellect 28.05	Resilience 9.25	
		Spouse Support 17.06	Sense of Humor 5.15	

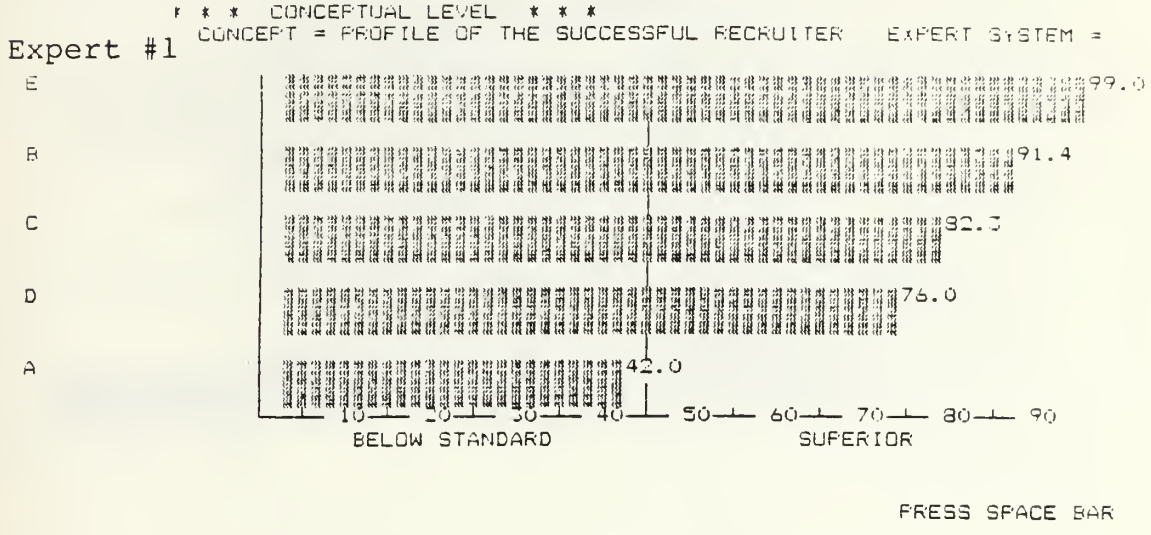
PROFILE OF THE SUCCESSFUL RECRUITER

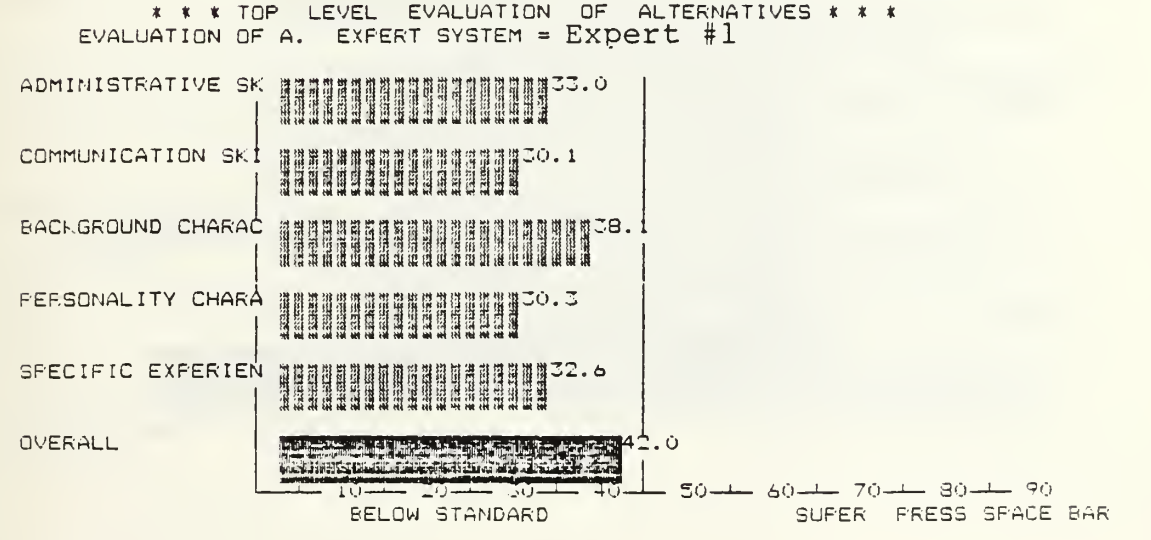
EXPERT #5

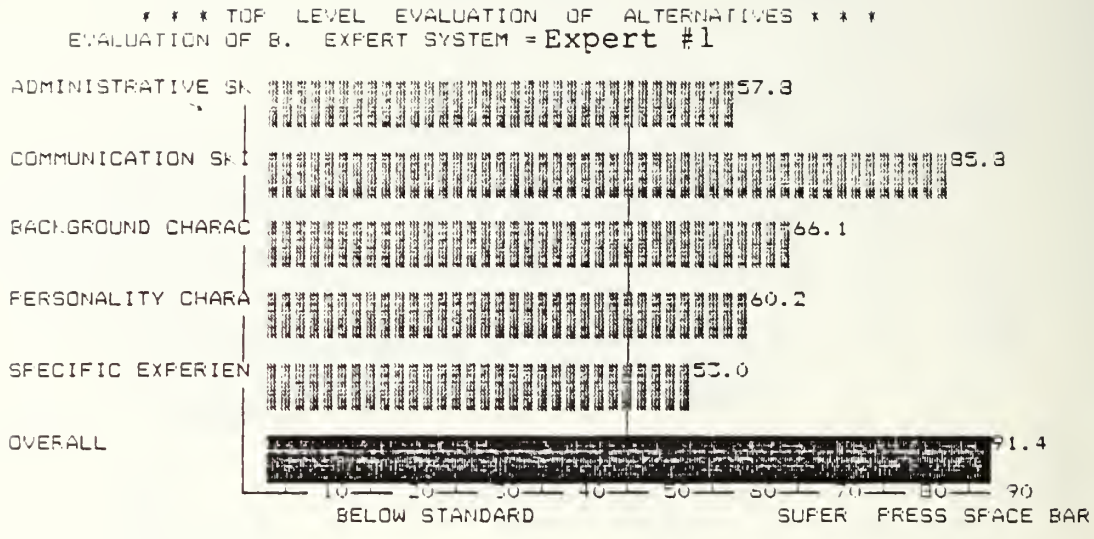
ADMINISTRATIVE SKILLS	COMMUNICATIONS SKILLS	BACKGROUND CHARACTERISTICS	PERSONALITY CHARACTERISTICS	SPECIFIC EXPERIENCE
8.59	24.42	19.86	40.71	6.43
Planning 65.31	Speaking 19.13	Age 16.49	Motivation 28.22	Sales Experience 34.43
Organizing 34.69	Writing 9.05	Gender 3.65	Commitment 19.98	Recruiting Experience 33.16
	Listening 27.90	Race/ Ethnicity 18.2	Extroverted 15.31	Recruiter Training 17.18
	Foreign Language 8.33	Years of Service 7.16	Flexibility 17.05	Public Speaking Experience 15.23
	Informing 26.57	Rank/ Paygrade 18.26	Integrity 11.61	
	Persuading 9.02	Intellect 21.63	Resilience 2.96	
		Spouse Support 14.62	Sense of Humor 4.87	

APPENDIX C

THE EXPERT SYSTEMS EVALUATE HYPOTHETICAL RECRUITER APPLICANTS



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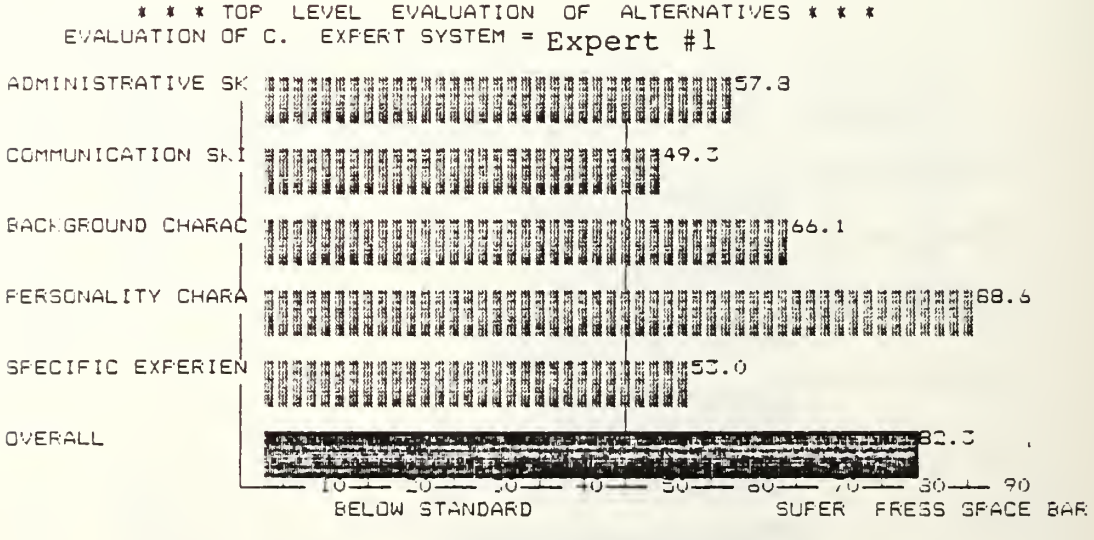
EVALUATION OF B. EXPERT SYSTEM = Expert #1
ADMINISTRATIVE SK
57.8
COMMUNICATION SKI
85.8
BACKGROUND CHARAC
66.1
PERSONALITY CHARA
60.2
SPECIFIC EXPERIEN
53.0
OVERALL
71.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR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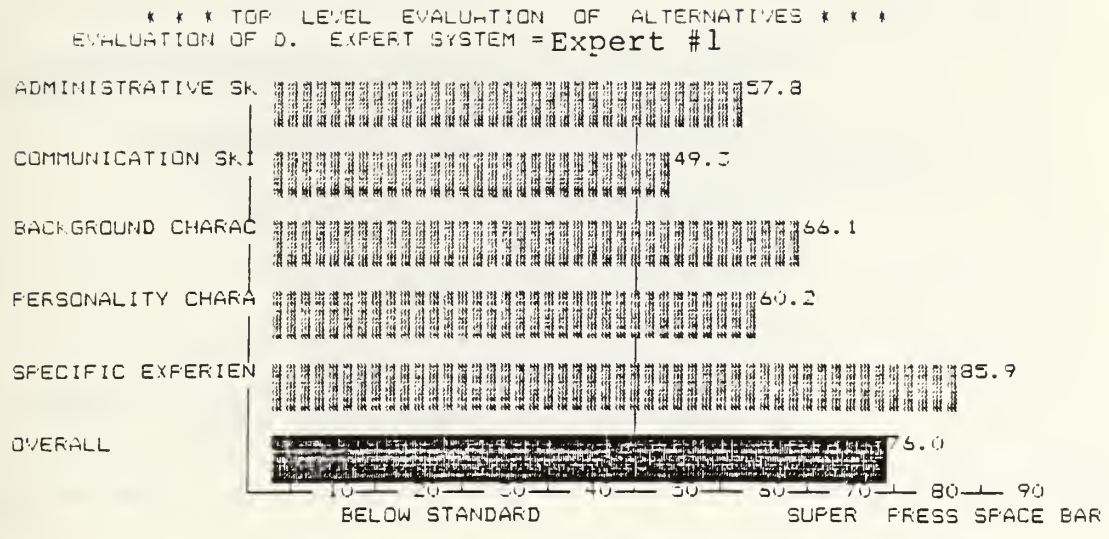
EVALUATION OF C. EXPERT SYSTEM = Expert #1
ADMINISTRATIVE SK
57.8
COMMUNICATION SKI
49.3
BACKGROUND CHARAC
66.1
PERSONALITY CHARA
68.6
SPECIFIC EXPERIEN
53.0
OVERALL
82.3
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR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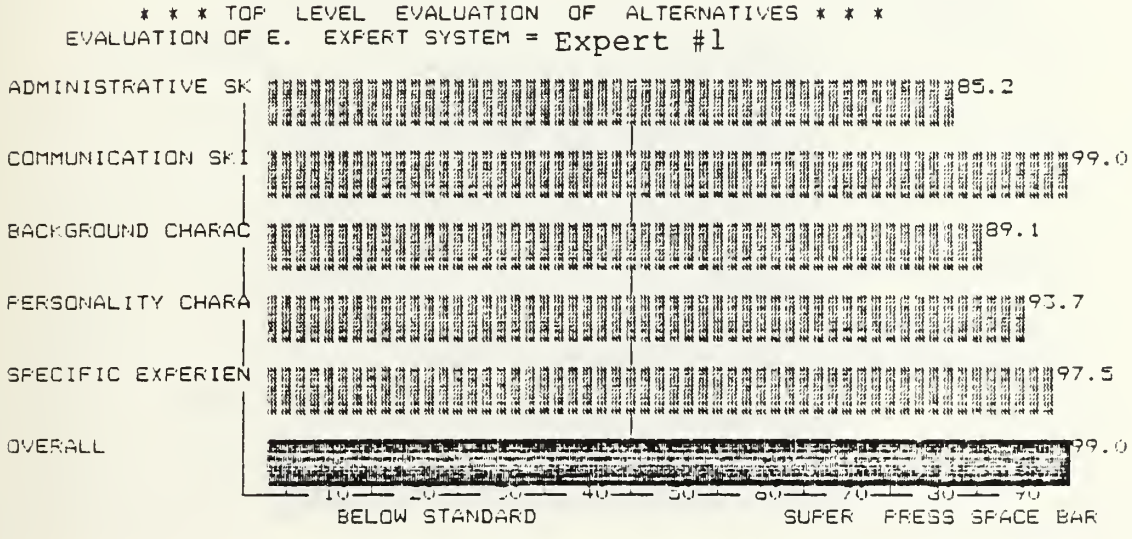
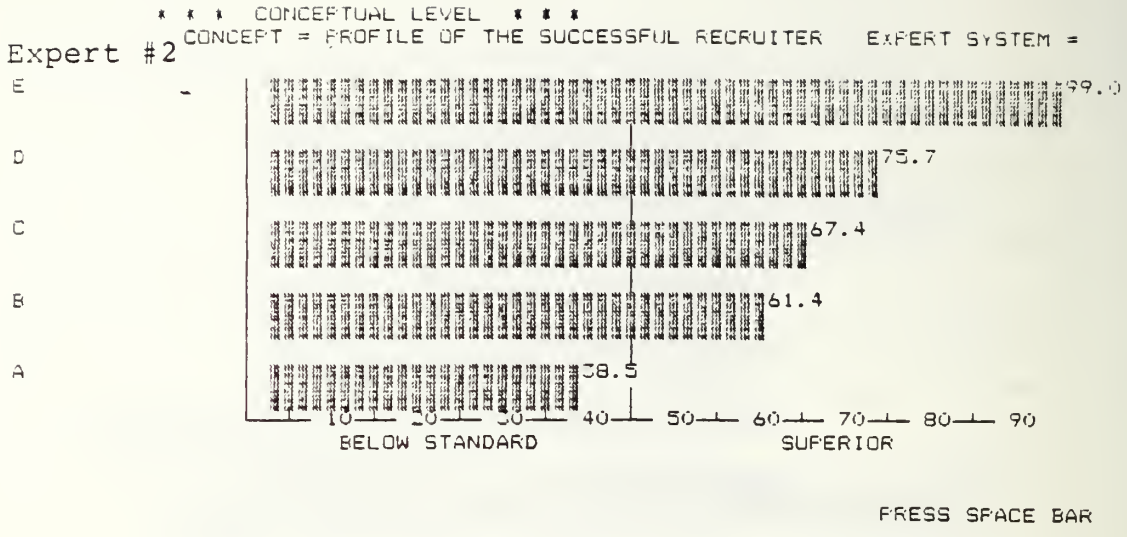
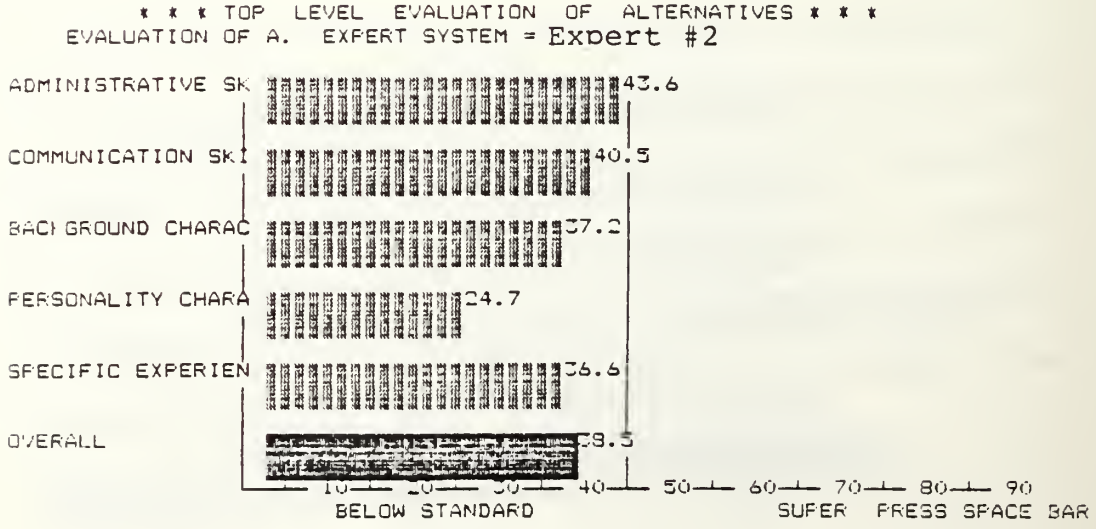
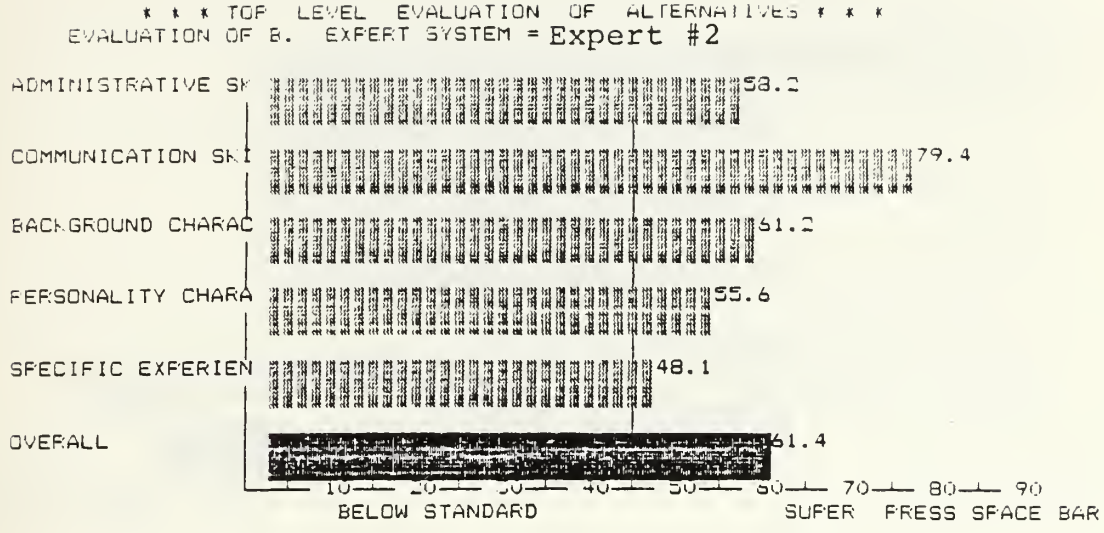
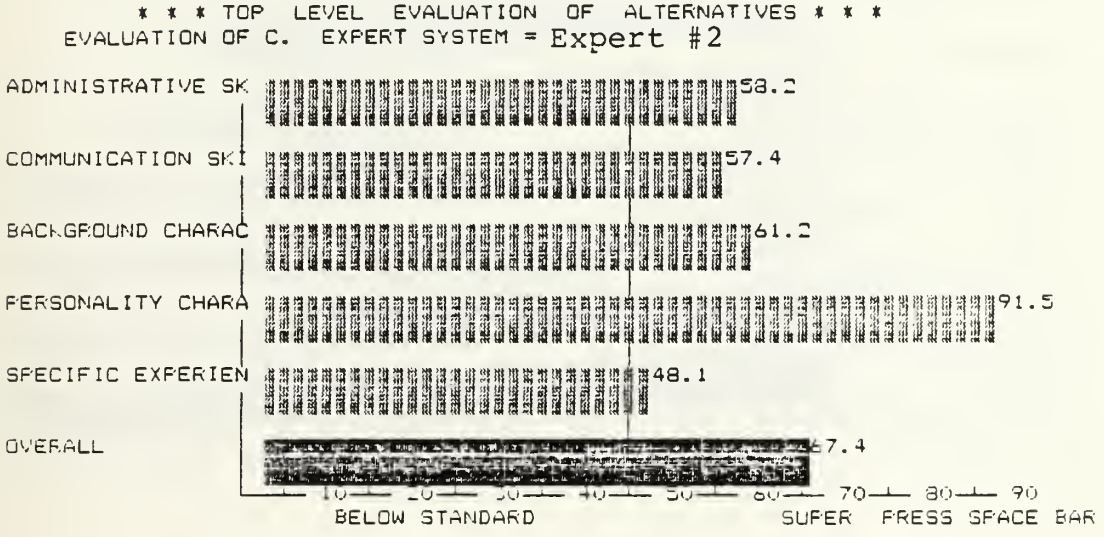
EVALUATION OF D. EXPERT SYSTEM = Expert #1
ADMINISTRATIVE SK
57.8
COMMUNICATION SKI
49.3
BACKGROUND CHARAC
66.1
PERSONALITY CHARA
60.2
SPECIFIC EXPERIEN
85.9
OVERALL
76.0
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

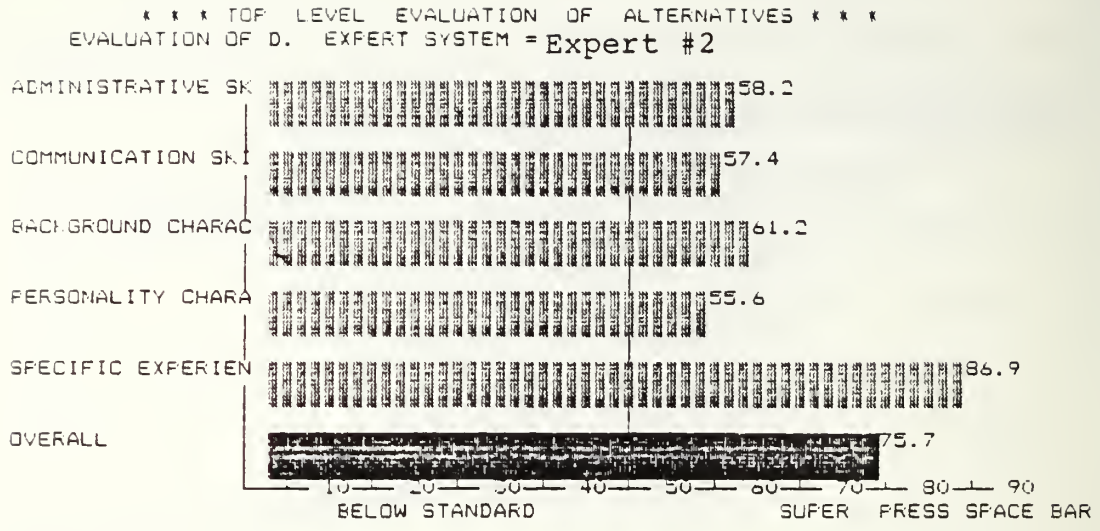

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF E. EXPERT SYSTEM = Expert #1
ADMINISTRATIVE SK
85.2
COMMUNICATION SKI
99.0
BACKGROUND CHARAC
89.1
PERSONALITY CHARA
93.7
SPECIFIC EXPERIEN
97.5
OVERALL
99.0
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

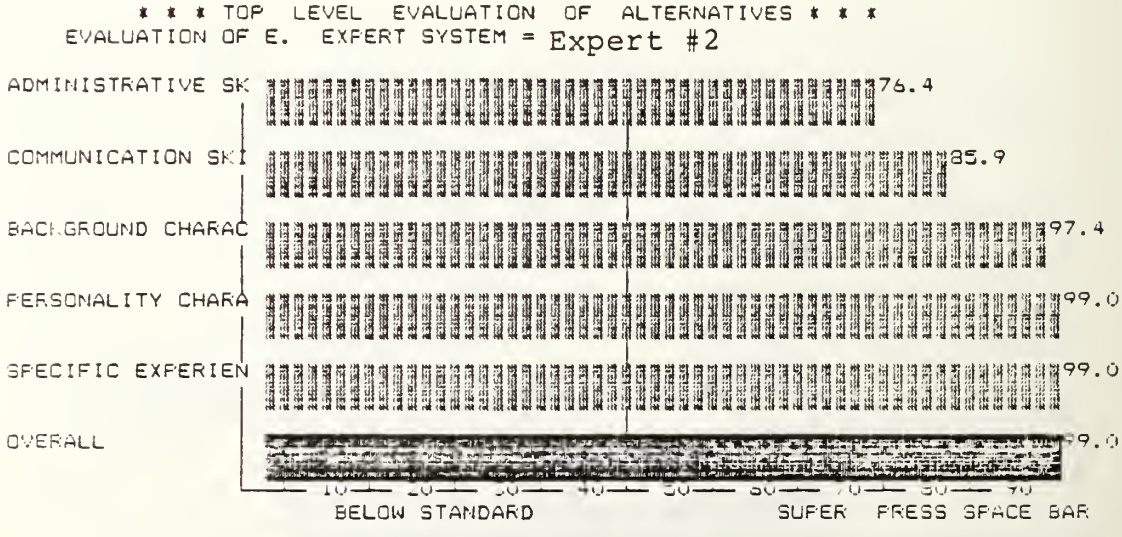

* * * CONCEPTUAL LEVEL * * *
CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =
Expert #2
E
D
C
B
A
39.0
75.7
67.4
61.4
38.5
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPERIOR
PRESS SPACE BAR

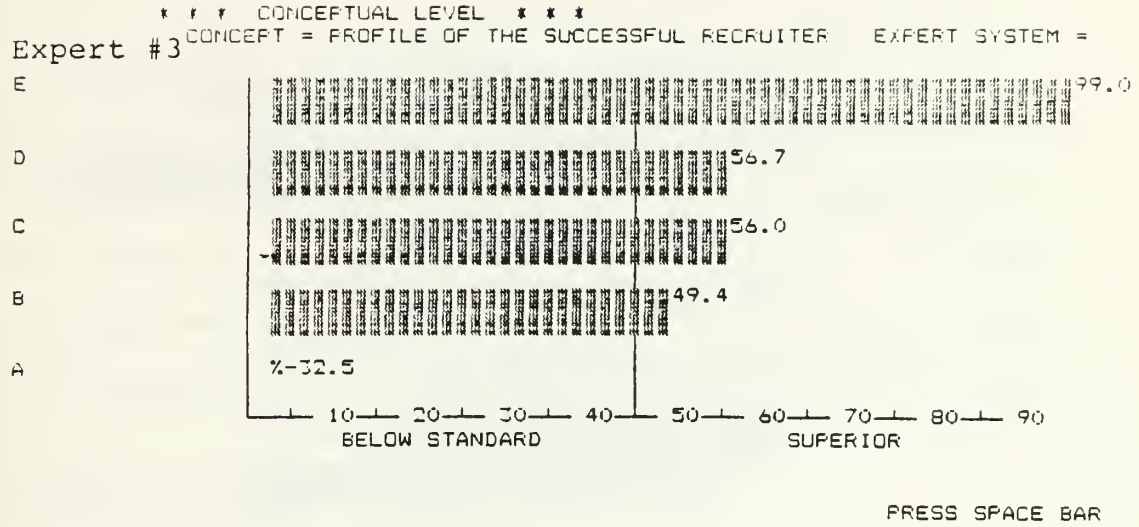

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF A. EXPERT SYSTEM = Expert #2
ADMINISTRATIVE SK
COMMUNICATION SKI
BACKGROUND CHARAC
PERSONALITY CHARA
SPECIFIC EXPERIEN
OVERALL
43.6
40.5
37.2
24.7
36.6
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

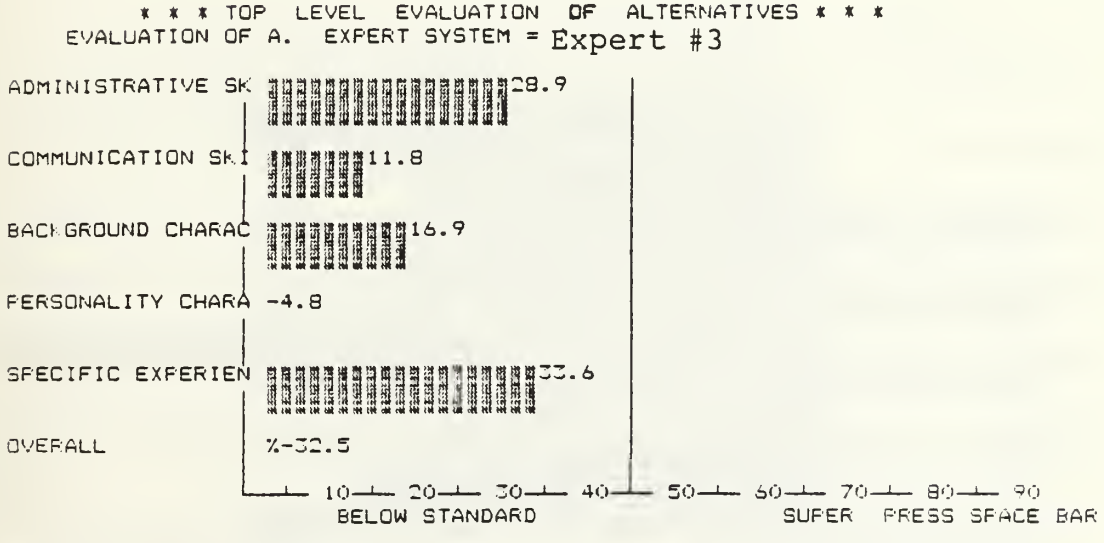

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF B. EXPERT SYSTEM = Expert #2
ADMINISTRATIVE SK
58.2
COMMUNICATION SKI
79.4
BACKGROUND CHARAC
61.2
PERSONALITY CHARA
55.6
SPECIFIC EXPERIEN
48.1
OVERALL
61.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

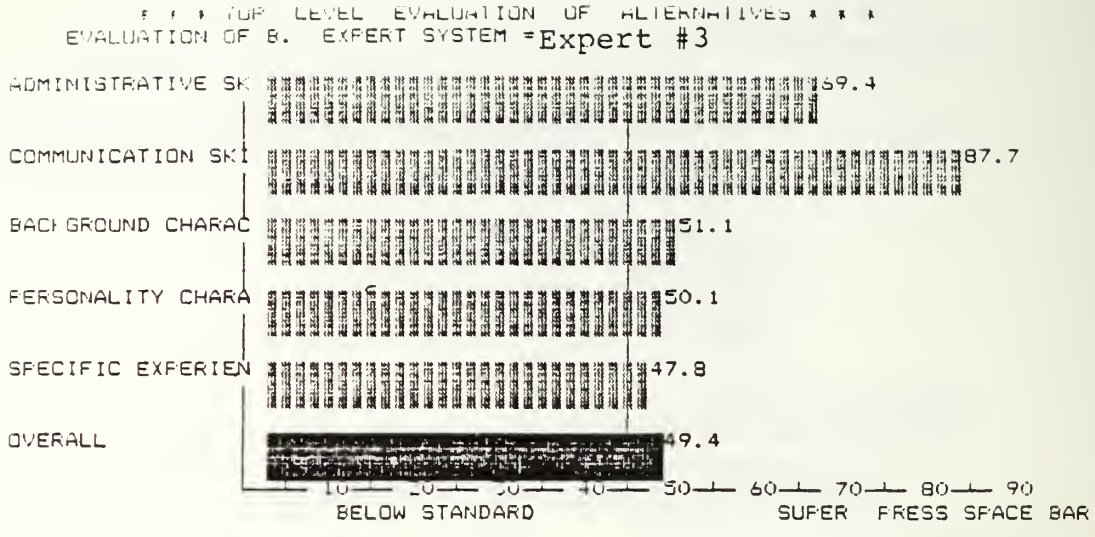

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF C. EXPERT SYSTEM = Expert #2
ADMINISTRATIVE SK
58.2
COMMUNICATION SKI
57.4
BACKGROUND CHARAC
61.2
PERSONALITY CHARA
91.5
SPECIFIC EXPERIEN
48.1
OVERALL
67.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

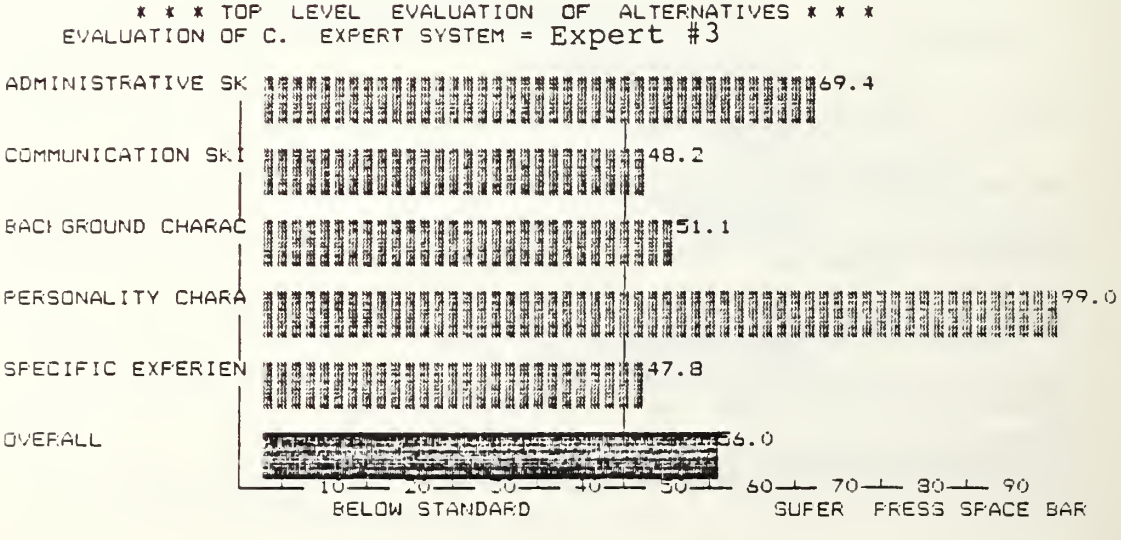

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF D. EXPERT SYSTEM = Expert #2
ADMINISTRATIVE SK
58.2
COMMUNICATION SKI
57.4
BACKGROUND CHARAC
61.2
PERSONALITY CHARA
55.6
SPECIFIC EXPERIEN
86.9
OVERALL
75.7
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

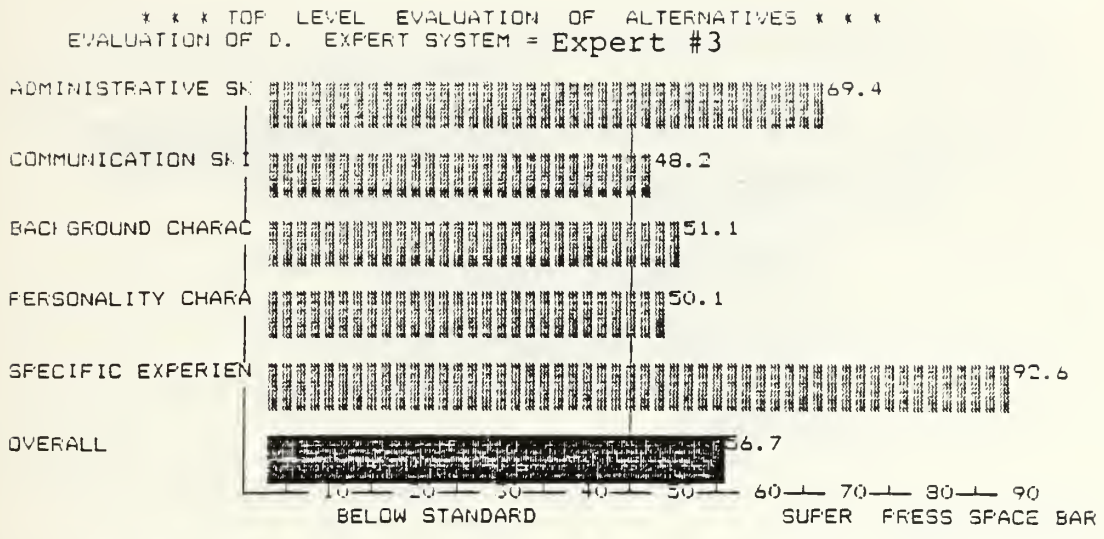

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF E. EXPERT SYSTEM = Expert #2
ADMINISTRATIVE SK
76.4
COMMUNICATION SKI
85.9
BACKGROUND CHARAC
97.4
PERSONALITY CHARA
99.0
SPECIFIC EXPERIEN
99.0
OVERALL
99.0
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

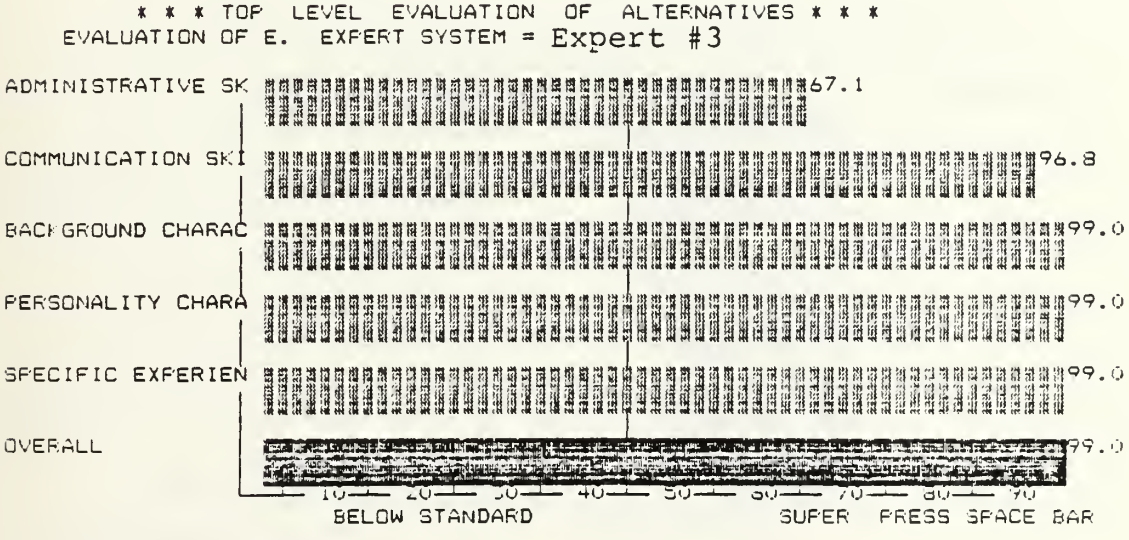

* * * CONCEPTUAL LEVEL * * *
Expert #3 CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =
E
D
C
B
A
99.0
56.7
56.0
49.4
%-32.5
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPERIOR
PRESS SPACE BAR

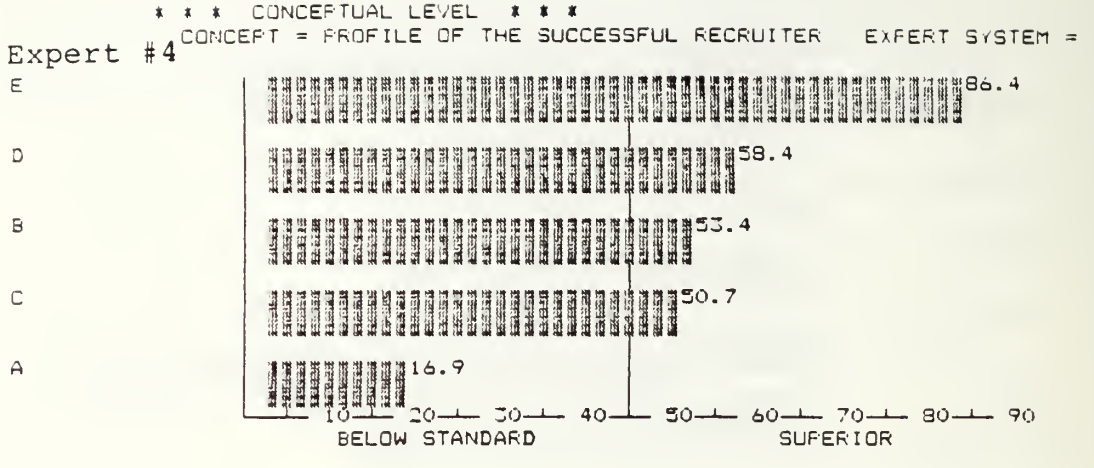

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF A. EXPERT SYSTEM = Expert #3
ADMINISTRATIVE SK
COMMUNICATION SKI
BACKGROUND CHARAC
PERSONALITY CHARA
SPECIFIC EXPERIEN
OVERALL
28.9
11.8
16.9
-4.8
33.6
%-32.5
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER
PRESS SPACE BAR

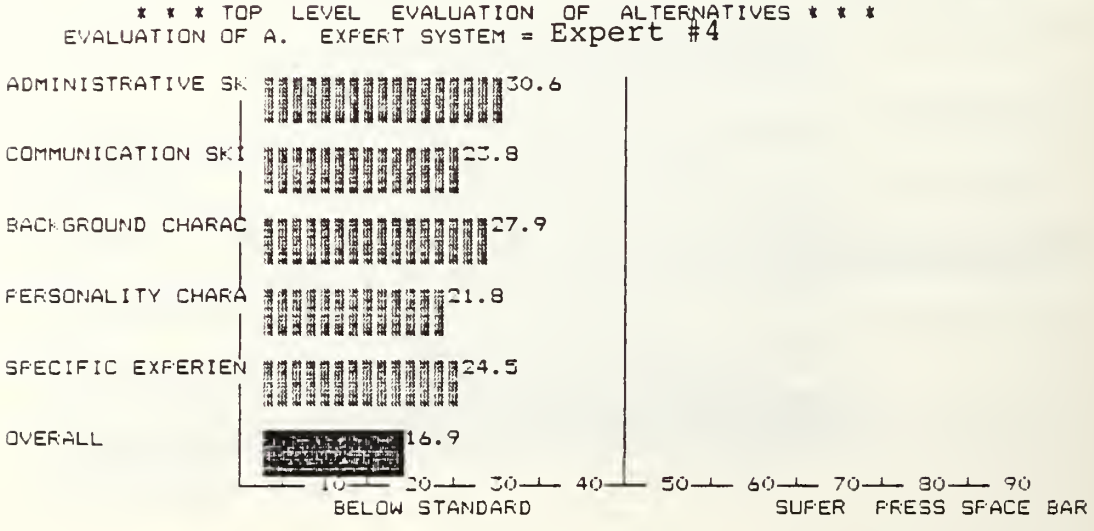

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF B. EXPERT SYSTEM = Expert #3
ADMINISTRATIVE SK
COMMUNICATION SKI
BACKGROUND CHARAC
PERSONALITY CHARA
SPECIFIC EXPERIEN
OVERALL
69.4
87.7
51.1
50.1
47.8
49.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER
PRESS SPACE BAR

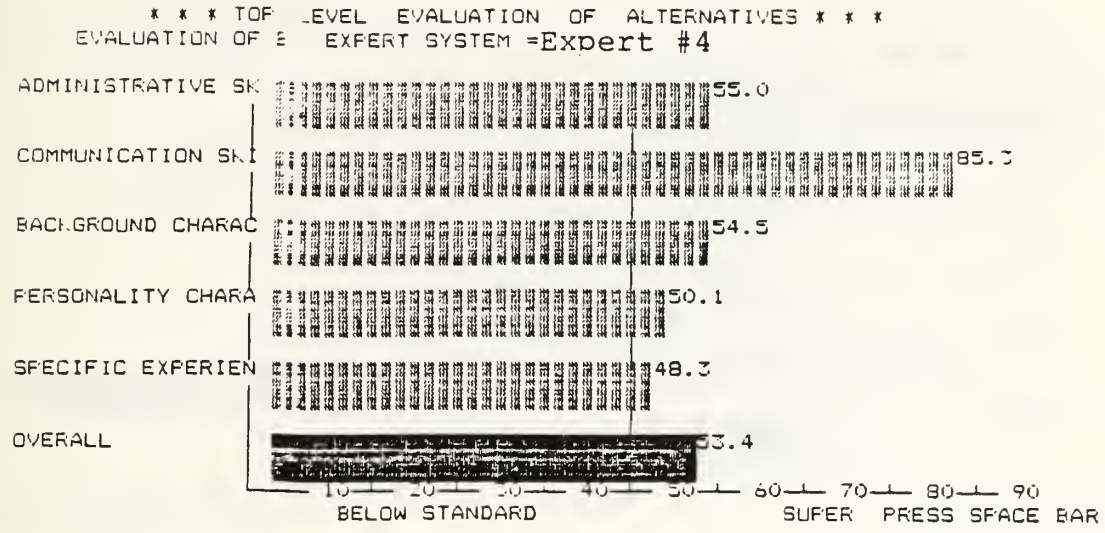

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF C. EXPERT SYSTEM = Expert #3
ADMINISTRATIVE SK
COMMUNICATION SKI
BACKGROUND CHARAC
PERSONALITY CHARA
SPECIFIC EXPERIEN
OVERALL
69.4
48.2
51.1
99.0
47.8
56.0
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER
PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF D. EXPERT SYSTEM = Expert #3
ADMINISTRATIVE SK
69.4
COMMUNICATION SK I
48.2
BACI GROUND CHARAC
51.1
PERSONALITY CHARA
50.1
SPECIFIC EXPERIEN
92.6
OVERALL
56.7
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF E. EXPERT SYSTEM = Expert #3
ADMINISTRATIVE SK
67.1
COMMUNICATION SKI
96.8
BACI GROUND CHARAC
99.0
PERSONALITY CHARA
99.0
SPECIFIC EXPERIEN
99.0
OVERALL
99.0
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR


* * * CONCEPTUAL LEVEL * * *
CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =
Expert #4
E
D
B
C
A
86.4
58.4
53.4
50.7
16.9
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPERIOR
PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF A. EXPERT SYSTEM = Expert #4
ADMINISTRATIVE SK
COMMUNICATION SKI
BACKGROUND CHARAC
PERSONALITY CHARA
SPECIFIC EXPERIEN
OVERALL
30.6
23.8
27.9
21.8
24.5
16.9
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR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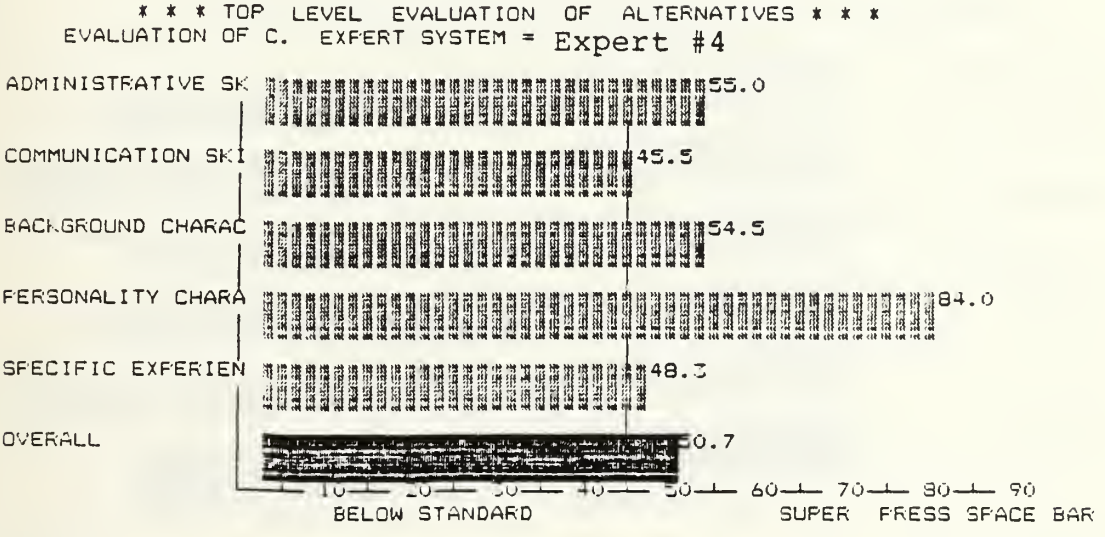
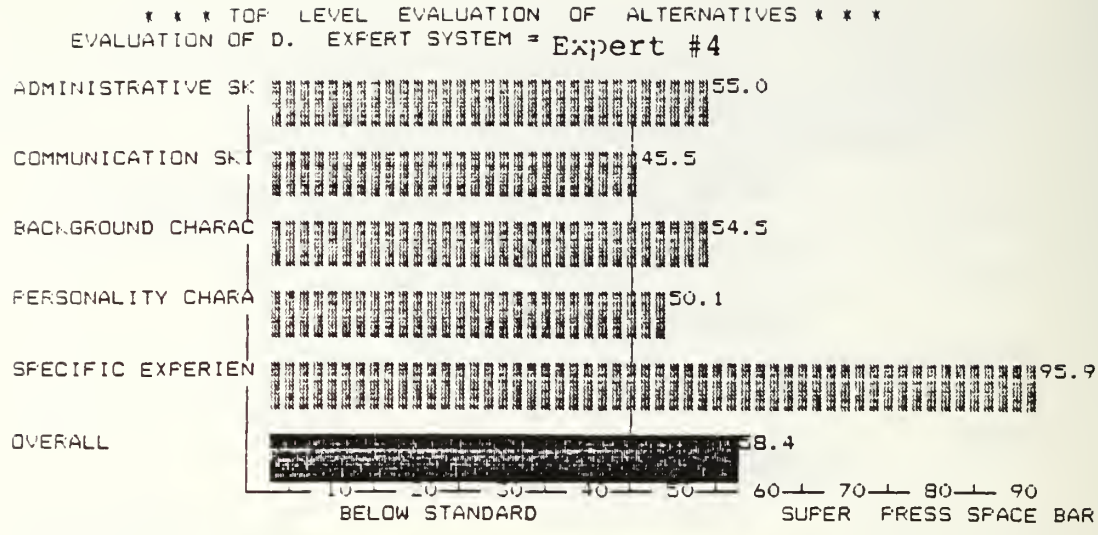
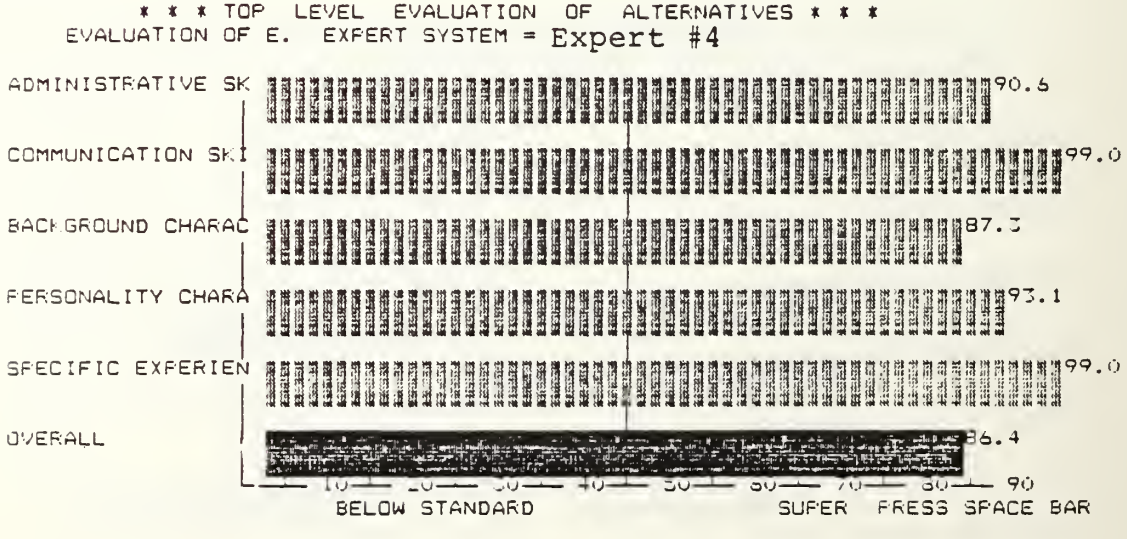
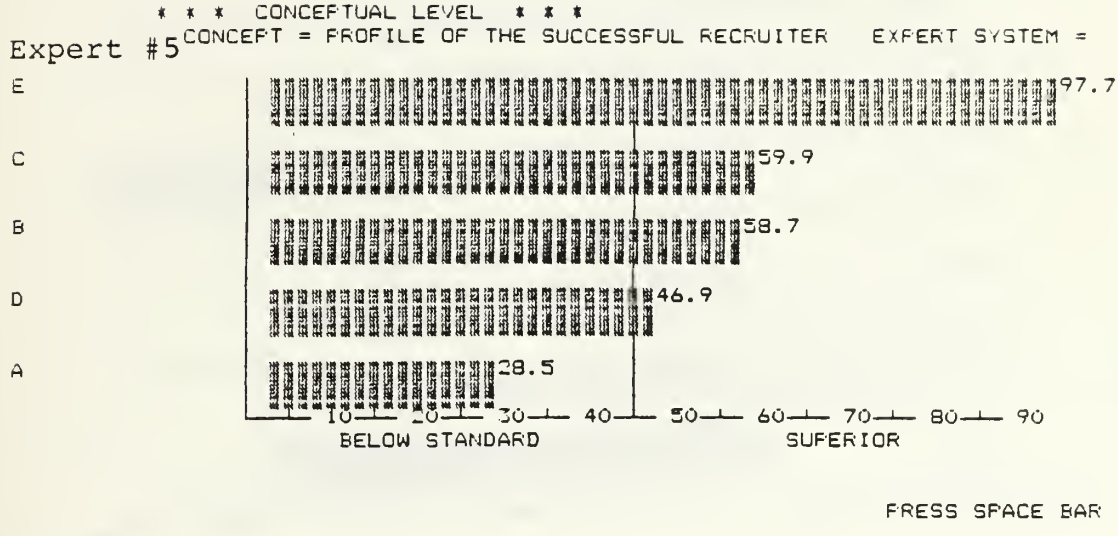
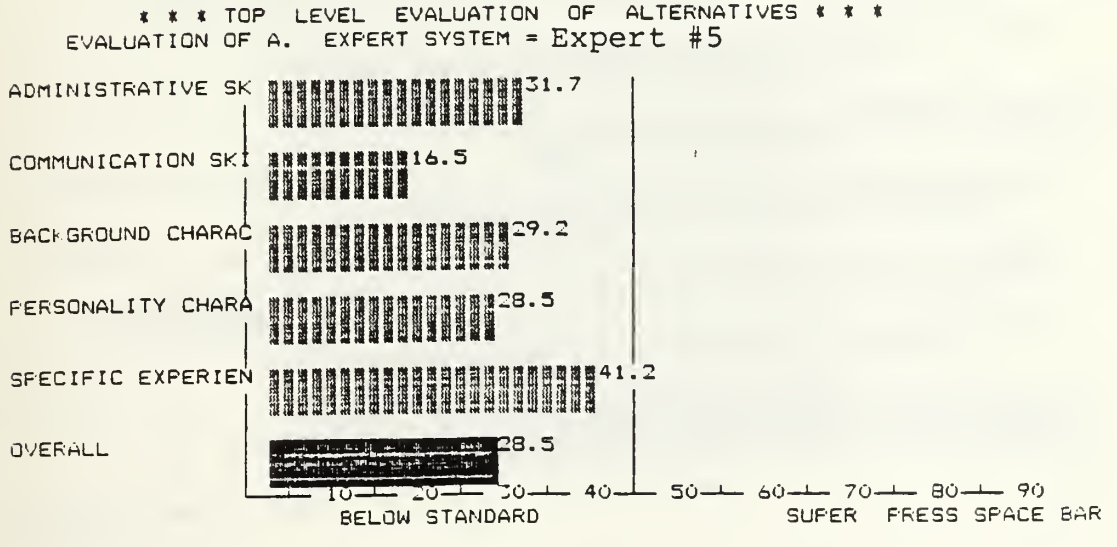
EVALUATION OF E EXPERT SYSTEM =Expert #4
ADMINISTRATIVE SK
55.0
COMMUNICATION SKI
85.3
BACKGROUND CHARAC
54.5
PERSONALITY CHARA
50.1
SPECIFIC EXPERIEN
48.3
OVERALL
53.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

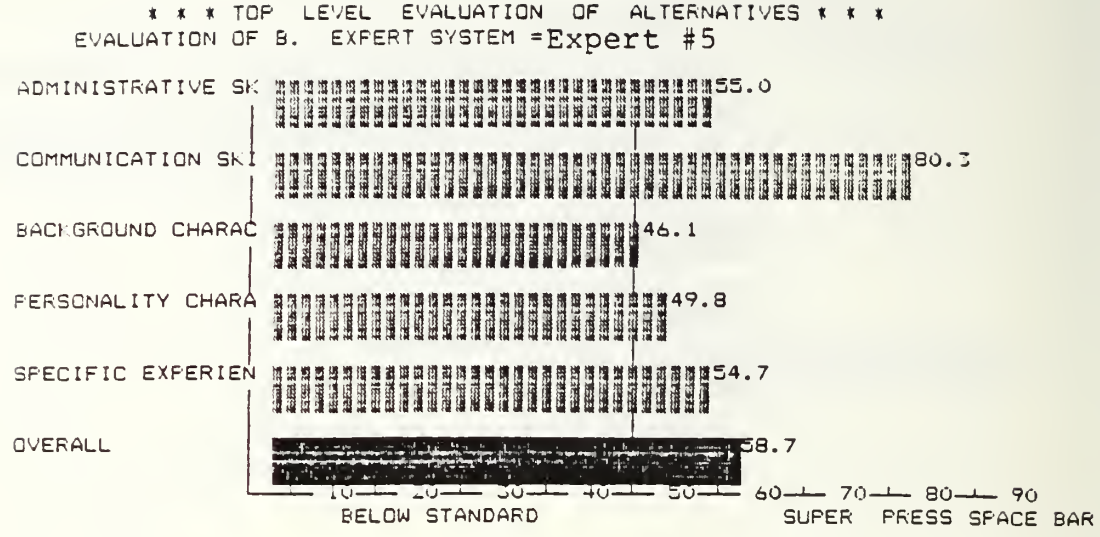

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF C. EXPERT SYSTEM = Expert #4
ADMINISTRATIVE SK
55.0
COMMUNICATION SKI
45.5
BACKGROUND CHARAC
54.5
PERSONALITY CHARA
84.0
SPECIFIC EXPERIEN
48.3
OVERALL
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

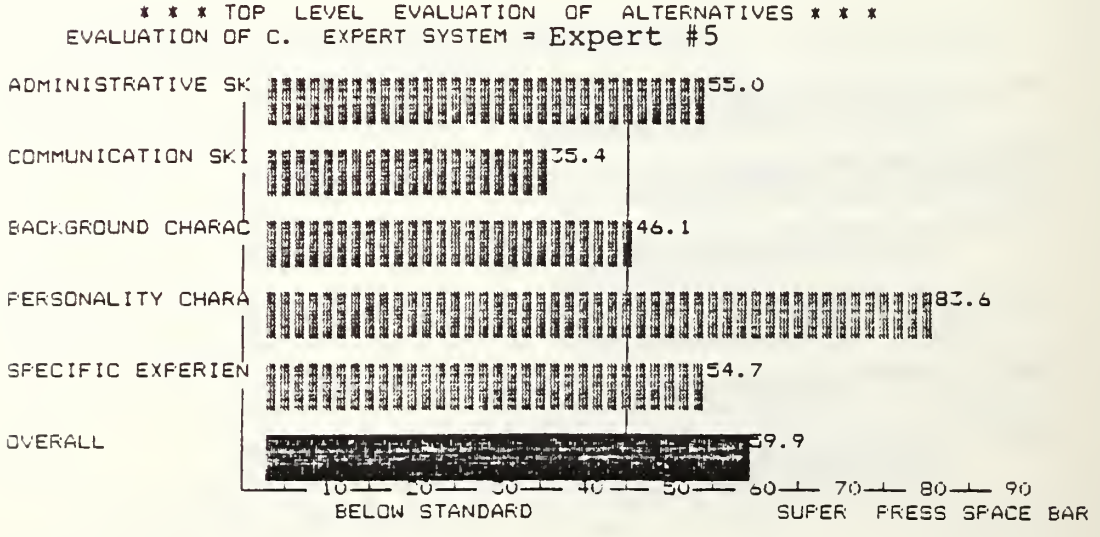

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF D. EXPERT SYSTEM = Expert #4
ADMINISTRATIVE SK
55.0
COMMUNICATION SKI
45.5
BACKGROUND CHARAC
54.5
PERSONALITY CHARA
50.1
SPECIFIC EXPERIEN
95.9
OVERALL
68.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

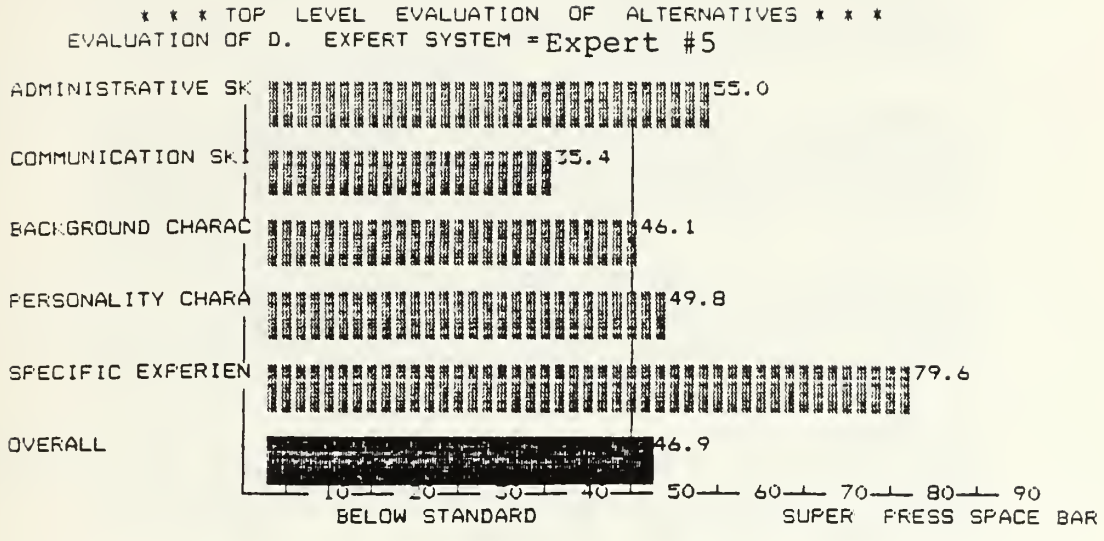

* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF E. EXPERT SYSTEM = Expert #4
ADMINISTRATIVE SK
90.6
COMMUNICATION SKI
99.0
BACKGROUND CHARAC
87.3
PERSONALITY CHARA
93.1
SPECIFIC EXPERIEN
99.0
OVERALL
86.4
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

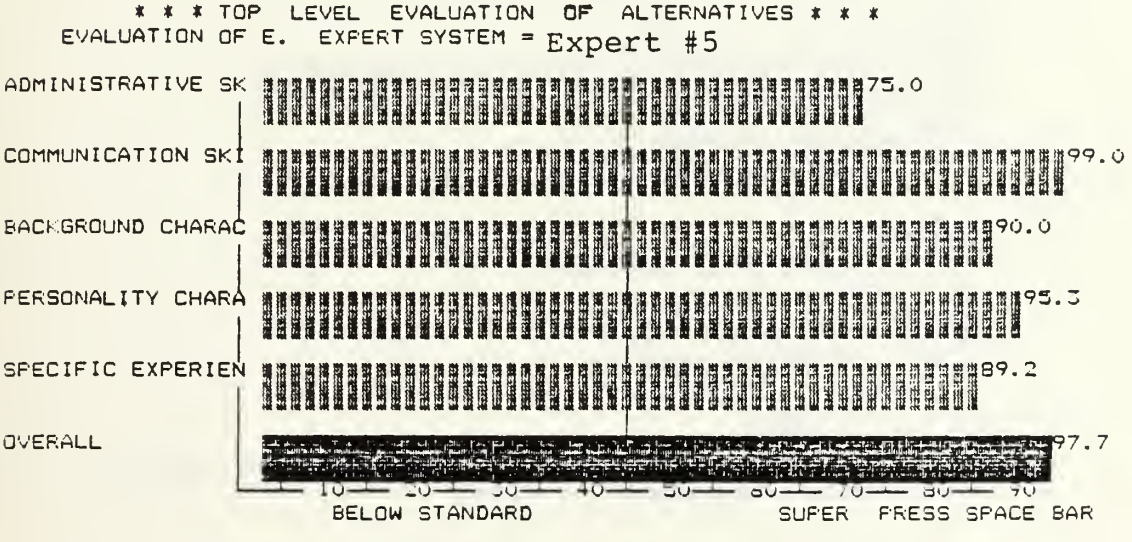

* * * CONCEPTUAL LEVEL * * *
Expert #5 CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =
E
C
B
D
A
97.7
59.9
58.7
46.9
28.5
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPERIOR
PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF A. EXPERT SYSTEM = Expert #5
ADMINISTRATIVE SK
COMMUNICATION SKI
BACKGROUND CHARAC
PERSONALITY CHARA
SPECIFIC EXPERIEN
OVERALL
31.7
16.5
29.2
28.5
41.2
28.5
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER
PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF B. EXPERT SYSTEM =Expert #5
ADMINISTRATIVE SK
55.0
COMMUNICATION SKI
80.3
BACKGROUND CHARAC
46.1
PERSONALITY CHARA
49.8
SPECIFIC EXPERIEN
54.7
OVERALL
58.7
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER
PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF C. EXPERT SYSTEM = Expert #5
ADMINISTRATIVE SK
55.0
COMMUNICATION SKI
35.4
BACKGROUND CHARAC
46.1
PERSONALITY CHARA
83.6
SPECIFIC EXPERIEN
54.7
OVERALL
59.9
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER
PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF D. EXPERT SYSTEM = Expert #5
ADMINISTRATIVE SK
55.0
COMMUNICATION SKI
35.4
BACKGROUND CHARAC
46.1
PERSONALITY CHARA
49.8
SPECIFIC EXPERIEN
79.6
OVERALL
46.9
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR


* * * TOP LEVEL EVALUATION OF ALTERNATIVES * * *
EVALUATION OF E. EXPERT SYSTEM = Expert #5
ADMINISTRATIVE SK
75.0
COMMUNICATION SKI
99.0
BACKGROUND CHARAC
90.0
PERSONALITY CHARA
95.3
SPECIFIC EXPERIEN
89.2
OVERALL
97.7
10 20 30 40 50 60 70 80 90
BELOW STANDARD
SUPER PRESS SPACE BAR

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